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BOARD OF EDITORS { Mr. Horace E. Smith, Chief Clerk Weather Bureau,
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Mr. Edward B. Garriott, in charge of Review Room.

INTRODUCTION.

This REVIEW is based on reports for August, 1891, from 2,575 regular and voluntary observers. These reports are classified as follows: 159 reports from Weather Bureau stations; 118 reports from United States Army post surgeons; 1,694 monthly reports from state weather service and voluntary observers; 34 reports from Canadian stations; 173 reports through the Central Pacific Railway Company; 397 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Ser-

vice;" monthly reports from the local weather services of Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa Weather and Crop Service, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New England, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, Washington, and Wisconsin, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR AUGUST, 1891.

The month was warmer than usual, except in the central river valleys and along the Saint Lawrence River, and on the Pacific coast it was the warmest August on record. Attending a warm wave which extended from the upper Missouri valley to New England and the middle Atlantic states from the 7th to 10th the maximum temperature was the highest ever noted for August at stations in the upper Mississippi valley, the middle lake region, eastern New York, and southern New England, and during a period of warm weather on the Pacific coast during the third decade of the month the temperature was the highest ever reported for August in northern California, Oregon, and Washington.

During a cool wave which extended eastward from the Rocky Mountains to the Atlantic coast from the 22d to the 29th, the temperature was the lowest ever noted for August from the Lake region and the Dakotas to the Gulf of Mexico, and heavy frost was reported from the middle and northeast slopes of the Rocky Mountains to western New York.

PRECIPITATION.

The monthly precipitation was greatest in areas from the lower Missouri valley to the south Atlantic and Florida coasts, where it exceeded 8.00 inches, and in parts of the south Atlantic states, Florida, Iowa, and Missouri it was more than 10.00 inches. Over the greater part of California, and at stations in the plateau region, no rainfall was reported. The areas of excess and deficiency were generally small and irregularly distributed. The greatest excess occurred in the south Atlantic states and southern Florida, where it was 4.00 to 5.00 inches, and the most marked deficiency on the middle Gulf coast, where it was 4.00 to 8.00 inches. At Wilmington, N. C., Statesburgh, S. C., Key West, Fla., Forsyth, Ga., Keokuk, Iowa, and Denver, Colo., the monthly precipitation was the greatest, and at Pensacola, Fla., Lead Hill, Ark., and Concordia, Kans., it was the least ever reported for August. Snow

was reported in the Paradise Mountains, Nevada, on the 6th, in the mountains of Colorado during the cool wave of the third decade of the month, in northwestern Wisconsin on the 22d and 23d, and at Buffalo, N. Y., on the 28th.

STORMS.

Numerous local storms attended the passage of the low areas, their occurrence being most frequently reported in the states of the middle and upper Mississippi and lower Ohio valleys, Michigan, New Jersey, North Carolina, Georgia, and Texas. Many of these storms were destructive to life and property, and in a number of instances, notably at Ellsworth, Minn., on the 13th, at Elizabethtown, Ind., on the 15th, and at Hansford, Tex., on the 21st, they exhibited tornadic features. The night of the 18th a cyclone devastated the Island of Martinique, Windward West Indies, and reports indicate that about seven hundred persons were killed, many injured, and that property to the value of about \$10,000,000 was destroyed. A storm of marked strength moved northward east of Bermuda on the 27th.

FLOODS.

Floods in rivers and streams were reported in Arkansas and Mississippi on the 2d, in south-central Nebraska on the 17th, in Macon county, Missouri, on the 21st, along the Schuylkill River, near Reading, Pa., on the 23d and 24th, in Baldwin county, Georgia, on the 26th, in eastern New York on the 27th, and along the Savannah River, Georgia, on the 27th and 28th.

DROUGHT.

Drought injured vegetation in southeastern Massachusetts, Rhode Island, Connecticut, about Micco, Fla., in parts of Alabama, Mississippi, Louisiana, southern Texas, northern Arkansas, central New Mexico, southeastern Arizona, in northwestern and eastern Kansas, and central and northwestern Wisconsin.

AUROSAS.

Well-defined auroral displays were reported over the northern part of the country from New England to Washington the night of the 28-29th.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for August, 1891, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars. The mean pressure was highest along the south Atlantic coast and over the Florida Peninsula, where it was above 30.05, and it was above 30.00 along the immediate Pacific coast north of the 40th parallel. The mean pressure was lowest over the San Joaquin Valley, California, where it fell below 29.85; it was below 29.90 over the greater part of the southern plateau region and the eastern half of California; and was below 29.95 from the Gulf of Saint Lawrence westward along the northern border of the country to northeast Washington.

A comparison of the pressure chart for August, 1891, with that of the preceding month shows a general increase in mean pressure from the lower Mississippi valley and the eastern slope of the Rocky Mountains westward, except on the north Pacific coast, and a decrease in pressure east of the Rocky Mountains and Texas, save in the Saint Lawrence Valley. The greatest increase in mean pressure occurred over the southern plateau region and the interior of Texas, where it was more than .05, and the most marked decrease was noted over Manitoba, where it exceeded .05.

The mean pressure was above the normal, except from the middle Atlantic coast over the lower Saint Lawrence valley, the Lake region, and the eastern part of the Dakotas, and on the north Pacific coast. The greatest departure above the normal pressure occurred over the plateau region and on the middle coast of the Gulf of Mexico, where it was .05, or more. In districts where the mean pressure was below the normal the departure was less than .05.

HIGH AND LOW AREAS.

The paths of well-defined areas of high and low pressure which appeared during the month are plotted on Charts IV and I, respectively, and some of the more prominent characteristics of the high and low areas are shown in the table at the end of this chapter.

HIGH AREAS.

Seven high areas appeared, the average number noted for August during the last 16 years being 5.7. Of the high areas traced 3 advanced from the British Northwest Territory, one was apparently an offshoot of the Pacific area of high pressure, one first appeared north of Lake Superior, one developed over the Lake region, and one, which is given a track from Texas to New England, was a subsidiary development or offshoot of the high area which advanced from the north Pacific coast. The movement of the high areas west of the Mississippi River was generally southeastward, while to the east of the Mississippi 3 of the areas moved southeastward and passed off the south Atlantic coast, 3 northeastward off the New England coast or over the Gulf of Saint Lawrence, and one disappeared north of Lake Superior. The highest pressure reported for the month was 30.44, at Dodge City, Kans., the evening of the 27th. The following is a brief description of the high areas referred to:

I.—The month opened with high pressure in the northwest and southeast districts and low pressure from the middle Mississippi valley to the Gulf of Saint Lawrence. On the 2d the pressure was high from the middle-eastern slope of the Rocky Mountains to Lake Superior, and the morning of the 3d high area I occupied the region north of the Great Lakes, whence it moved to east New England by the 4th. The morning of the 5th the pressure was highest over central New England, and on the 6th high pressure prevailed along the Atlantic coast from Nova Scotia to Florida.

II.—On the morning of the 6th two centers of high pressure appeared within an extensive area of high which occupied the country east of the Mississippi River, one being located over south Michigan, and the other over east Tennessee. By the

evening of the 6th the high areas had united over the upper Ohio valley and a ridge of high pressure extended from the Ohio Valley southeast to Florida and northeast to Nova Scotia. During the next two days the high area settled south and southeast and passed off the south Atlantic coast the night of the 8th.

This area had the slowest progressive movement, 17 miles per hour, and the abnormal temperature fall during its passage was the least noted in connection with the high areas of the month. A severe thunder and wind storm occurred at Augusta, Ga., in the central part of the high area, the evening of the 7th.

III.—Advanced from the British Northwest Territory and the morning of the 11th was central north of Montana, whence it moved southeastward and disappeared off the south Atlantic coast the night of the 14th.

This area was attended by the greatest abnormal pressure change in 12 hours noted during the month, the increase for this period being .48 at Minnedosa, Man., on the 10th, and its passage was attended by light frost at Weston, Wis., on the 12th, and at South Kortright, N. Y., on the 13th.

IV.—Appeared central over Manitoba on the 14th and moved thence southeastward and passed off the south Atlantic coast the night of the 16th. Attending the passage of this high area light frost was reported at Butternut, Wis., on the 14th.

V and Va.—Was apparently an offshoot of the Pacific area of high pressure and the morning of the 21st was central north of Montana, whence it passed east to Wyoming by the 22d, and thence to east Nebraska. On the morning of the 23d an elongated area of high pressure extended from west Texas to Minnesota, with two centres of high pressure, one, number V, in east Nebraska, and the other Va, in northwest Texas. The first-named area of high moved northeast and disappeared north of the Lake region during the 24th, and the other passed east-northeast and disappeared off the New England coast during the 26th.

Attending the passage of this high area unusually cool weather prevailed between the Rocky Mountains and the Lake region. On the 21st snow was reported on the plains east of Pueblo, Colo.; on the 22d frost was reported in parts of the Dakotas, Minnesota, Wisconsin, Iowa, and Nebraska; on the 23d frost occurred in the states of the lower Missouri, upper Mississippi, and Red River of the North valleys; and on the 24th in Wisconsin, South Dakota, Iowa, and Missouri. On the 24th the temperature was the lowest ever reported for August at points in the Mississippi Valley from Iowa to Arkansas; and on the 25th there was a decided fall in temperature in Texas, and light frosts were reported in the river bottom near Denison.

VI.—Appeared central north of Montana on the 25th and moved thence to the Ohio Valley by the 28th, whence it passed northeastward and disappeared over the Gulf of Saint Lawrence the night of the 30th.

The passage of this high area was attended by cool weather from the Dakotas eastward. On the 27th the temperature was below freezing and ice and killing frost formed in parts of North Dakota; on the 28th frost was reported in south and northeast Wisconsin, and a few flakes of snow were noted at Buffalo, N. Y.; on the 29th ice was reported at Crandon, Wis., and frost in upper Michigan and the north part of lower Michigan, and on the 30th frost was reported in extreme western New York.

LOW AREAS.

In August the tracks of low areas which advance east of the Mississippi River are usually somewhat farther south than in June and July, and August storm-track charts for the last 18 years show that storms from the interior of the country do not, as a rule, pass south of the Ohio River. August marks the height of the West India cyclone season, and in August of

preceding years a number of the more destructive storms of this class have recurved over the Gulf of Mexico and the southeast part of the United States.

The tracks of 11 low areas are plotted for the current month, the average number noted for August during the last 18 years being 9.7. Of the low areas traced 2 apparently advanced from the north Pacific Ocean, 5 first appeared in the British Northwest Territory, one over the northern plateau region, one in the lower lake region, one on the southeast slope of the Rocky Mountains, and one in the middle Mississippi valley. The tracks generally converged towards the Great Lakes and the Canadian Maritime Provinces, and but one storm followed a path south of the Ohio River. The average rate of advance of the storms, 26 miles per hour, was one mile greater than the average for the last 18 years. The lowest pressure noted for the month was 29.34 at Prince Albert, N. W. T., the evening of the 18th.

From the 1st to 3d the pressure was low over the Gulf of Saint Lawrence and the lower Saint Lawrence valley, and during the 1st and 2d a low area passed northeastward along the middle Atlantic and New England coasts and thence to the west part of the Gulf of Saint Lawrence. The hurricane which devastated Martinique, W. I., the night of the 18th is referred to under the head "North Atlantic storms."

The following is a brief description of the low areas whose tracks appear on Chart I:

I.—Appeared central over the upper Mississippi valley the morning of the 1st, and moving thence slowly south of east disappeared off the middle Atlantic coast during the 4th. This was the only storm of the month whose path was south of the Ohio Valley and its course was apparently due to high area I, which moved eastward from the region north of Lake Superior to New England from the 3d to 5th.

On the 1st an area of rain extended from the Missouri and lower Mississippi valleys to the south and middle Atlantic coasts, rain fell in parts of the Lake region, the Saint Lawrence Valley, and New England, and a severe local storm was reported in Indian Territory. On the 2d rain fell in areas in the Gulf States, the middle Mississippi and Ohio valleys, and on the middle and south Atlantic coasts, and severe local storms were reported in Kentucky. On the 3d rain fell from the middle Mississippi valley to the Virginia and North Carolina coasts, and the rainfall was excessive, with heavy thunderstorms, in North Carolina. On the 4th the rain area moved off the Atlantic coast with very heavy rainfall in North Carolina, Virginia, and along the middle Gulf coast.

II.—Was central over Alberta the evening of the 3d, whence it moved eastward to Manitoba by the 5th, and by the evening of that date was central over South Dakota, whence it moved slowly northeast to the region north of Lake Superior by the night of the 8th, and passed thence eastward to the Gulf of Saint Lawrence by the 10th. The course and slow movement of this storm from the 5th to the 8th were apparently due to the presence over the south part of the Lake region and the Ohio Valley of high area II.

On the 3d light rain fell in the Red River of the North and middle Missouri valleys. On the 4th rain fell in areas in the middle Missouri valley, and heavy thunder and hail storms occurred in South Dakota. On the 5th rain fell in the upper Missouri valley, and heavy thunderstorms were reported in North Dakota, Montana, and Wyoming. On the 6th rain fell in areas in the middle and upper Missouri valleys and the Lake region, and destructive hailstorms occurred in Minnesota and North Dakota. On the 7th rain fell in the upper Missouri and Red River valleys and the upper lake region, and hailstorms were reported in Minnesota and the Dakotas. On the 8th rain fell from the upper Missouri valley over the north part of the upper lake region, in the Saint Lawrence Valley, and north New England, and heavy wind and thunder storms occurred in Michigan and Wisconsin. On the 9th the rain area extended from the upper Mississippi valley to the middle Atlantic and New England coasts, and severe thunder and wind

storms occurred in the Lake region. On the 10th the weather was clearing in the middle Atlantic and New England states.

Attending the approach and slow passage of this low area exceptionally warm weather prevailed in the Northwest; the 7th was the hottest day of the season in parts of the Dakotas; on the 8th the warm wave extended to the Ohio Valley, and on the 9th over the Lake region and New York. The greatest abnormal temperature rise in 12 hours, 22°, was noted at Rapid City, S. Dak., on the 3d.

III.—Was central over Assiniboia the evening of the 9th, whence it moved southeast to North Dakota, thence northeast to the region north of Lake Superior, and thence eastward to the Gulf of Saint Lawrence where it disappeared beyond the region of observation during the 12th. This storm was apparently forced southward the early part of the 10th by high area III which occupied the country to the north and northwest of its position. During the 10th the storm moved northeastward along the southeast edge of the high area and passed rapidly eastward beyond its influence.

Rain fell in the middle Missouri and upper Mississippi valleys and in the Lake Superior region, and destructive thunderstorms occurred in Indiana, Illinois, and Iowa on the 10th. On the 11th rain fell from the lower Missouri to the upper Saint Lawrence valleys and in areas in the Atlantic coast states, and severe local storms were reported in the middle Mississippi and Ohio valleys, the Lake region, and the middle Atlantic states. On the 12th rain fell in areas in the Atlantic coast states, and heavy thunderstorms occurred in the middle Atlantic and New England states.

Following close upon and forming a continuation of the warm period noted under the description of low area II, a warm wave prevailed over the Northwest on the 9th and extended over the middle Mississippi and Ohio valleys, the Lake region, and the middle Atlantic and New England states. Exceptionally high temperature, resulting in numerous prostrations and deaths, continued over the middle Atlantic states until after the 13th, when the passage of high area III was attended by cooler weather.

IV.—Apparently developed over the plateau region and the morning of the 13th was central over South Dakota, whence it moved rapidly eastward and disappeared off the south New England coast the night of the 15th. During its passage over the central valleys on the 14th this storm was ill-defined.

On the 13th rain fell in the middle Missouri and upper Mississippi valleys and the upper lake region, and destructive local storms occurred in the regions named, except in the east part of the upper lake region. On the 14th rain fell from the middle Missouri valley over the Lake region, and local storms were reported in the lower Missouri, upper Mississippi, and Ohio valleys. On the 15th the rain area moved eastward over New England, and severe local storms occurred in the middle Atlantic states and south New England.

V and Va.—Apparently advanced from the north Pacific coast, and passing eastward along the north line of Montana reached North Dakota on the 15th, whence it moved to the lower Missouri valley by the 16th, where it united with Va which had advanced from west Kansas during the 14th and 15th. Passing east-northeast the storm-center traversed the Lake region and Saint Lawrence Valley and disappeared over the Gulf of Saint Lawrence during the 18th.

On the 14th rain fell in Wyoming, South Dakota, and Nebraska, and local storms occurred in west Nebraska. On the 15th the rain area extended from the lower Missouri valley over the lower Ohio valley, and severe local storms were reported in the regions named. On the 16th rain fell from the middle Mississippi valley to the Virginia and North Carolina coasts, and local storms occurred in the middle Mississippi and Ohio valleys. On the 17th rain and destructive local storms occurred in areas from the Lake region to Tennessee. On the 18th the weather was clearing from the middle and upper Mississippi valleys eastward, and local storms occurred in the Ohio Valley.

NORTH ATLANTIC STORMS FOR AUGUST, 1891 (pressure in inches and millimeters; wind-force by Beaufort scale).

The paths of storms that appeared over the west part of the north Atlantic Ocean in August, 1891, are shown on Chart I. These paths have been determined from reports of shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

The normal distribution of atmospheric pressure over the north Atlantic Ocean in August favors the passage of storms in high latitudes, and gales of destructive violence are seldom encountered along the trans-Atlantic steamship routes during that month.

In the West Indies the month marks the height of the cyclone season, and records of past years show that storms of this class have averaged about two per month in August. These storms generally recurve over the Gulf of Mexico or off the southeast coast of the United States, and in a number of instances have been attended by enormous loss of life and property.

The most important storm of the current month was the cyclone which visited Martinique, W. I., the night of the 18th. A second storm of marked strength passed east of Bermuda on the 27th. In the middle latitudes unsettled weather attended the passage of areas of low pressure of moderate strength during the first and second decades of the month, the only storms of marked energy being noted over the eastern part of the ocean and the British Isles after the 20th.

The month opened with low pressure over the Gulf of Saint Lawrence and Newfoundland and northwest of the British Isles, and high pressure over mid-ocean. The pressure continued low over the western part of the ocean, and the morning of the 4th two storm-centers appeared, one, a continuation of low area I, off the Virginia coast, and the other, which apparently developed south of Newfoundland on the 3d, was central on the east Newfoundland coast. Low area I moved slowly eastward until the 7th, after which date it probably recurved northward and united with an area of low pressure which occupied the region north of the Gulf of Saint Lawrence. Low pressure continued north of Newfoundland until the 14th; on the 11th low area II passed into that region from the lower Saint Lawrence valley, and on the 13th low area III moved northeast over north Newfoundland. The continued low pressure over the Gulf of Saint Lawrence and Newfoundland during the first half of the month indicated an unusual westward and southward position of the Iceland area of low pressure. During the 7th and 8th there was a transfer of low pressure eastward over mid-ocean. During the 2d and 3d a storm passed eastward over the north part of the British Isles, and the pressure remained low over the North Sea until the 5th. From the 10th to 13th a storm moved from mid-ocean in high latitudes over the north part of the British Isles and disappeared over the North Sea. The night of the 15th low area IV moved off the southeast New England coast, and passing thence northeastward disappeared north of Newfoundland after the 17th. On the 18th low area V moved eastward over the Canadian Maritime Provinces and the Gulf of Saint Lawrence, and on the 19th was central over south Newfoundland. The morning of the 20th this storm was central over the Banks of Newfoundland, whence it moved northeast and passed north of the region of observation after the 21st. On the 21st and 22d low pressure prevailed over the Gulf of Saint Lawrence under the influence of low area VI which passed northeast over Labrador. During the greater part of the second and the first half of the third decades of the month low pressure continued over mid-ocean, and on the 25th pressure falling to about 29.25 (743) and whole gales were reported along the trans-Atlantic steamship routes near the 20th meridian. During the last half of the month low pressure prevailed over the British Isles. On the 21st a destructive storm occurred over the English Channel attending the passage of an area of low pressure which had advanced from the northwest. On the 26th a severe storm moved eastward over the north part of the British Isles, with heavy gales

and pressure falling to 28.70 (729) at Leith, Scotland. On the 29th low area IX passed northeastward over the Gulf of Saint Lawrence, and by the 31st this storm had apparently reached mid-ocean, where the pressure fell below 29.00 (737) and strong to whole gales were reported.

MARTINIQUE CYCLONE OF AUGUST 18, 1891.

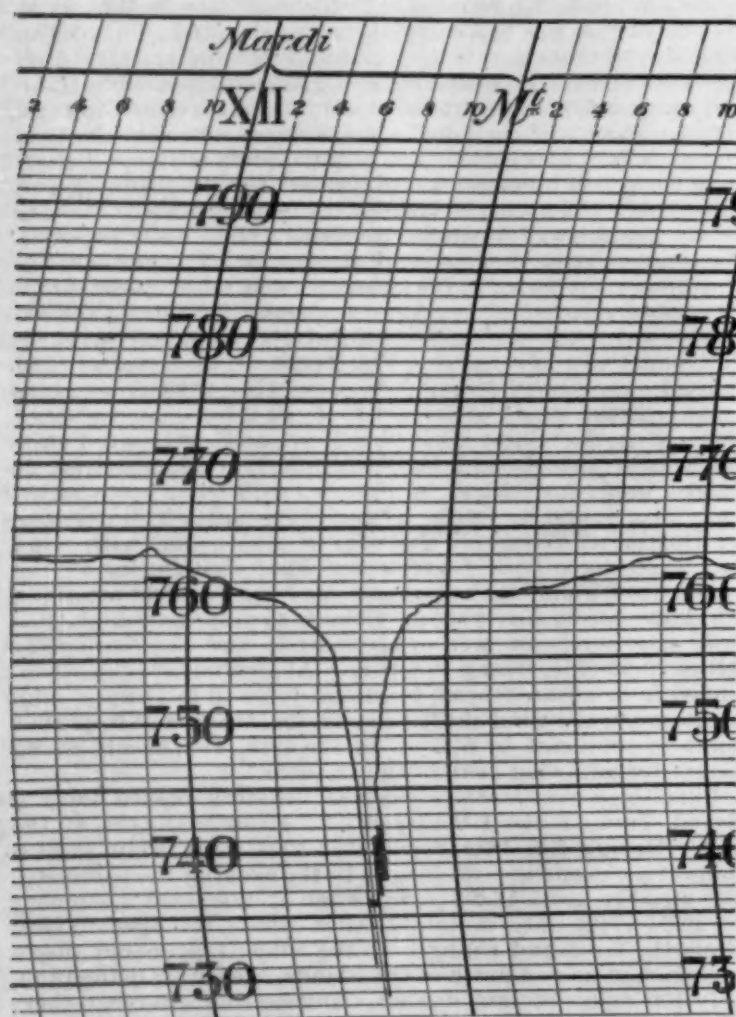
The night of the 18th one of the most disastrous of the type of storms known as West India cyclones devastated the Island of Martinique, in the Windward West Indies. At Martinique the storm continued four hours, from 6 to 10 p. m., and the center passed that place between 7 and 8 p. m., apparently traveling in a west-northwest direction at a speed of about 11 miles per hour. During the day a fresh north-northeast breeze had prevailed at Martinique, with rapidly falling barometer and wind increasing in force. The storm struck the east side of the island about 6 p. m., and in its passage over the island the destruction was less complete on the elevated plains. The wind veered from ene. to sse., and was most destructive from the latter point. Incessant lightning, unaccompanied by thunder, continued throughout the storm, and at its conclusion two distinct shocks of earthquake occurred at intervals of about five seconds. It is stated that in the vicinity of Caraval Rock at 10 a. m. two immense waves passed from the direction of Saint Lucia, the sea in the vicinity being quite calm. Another notable feature was the deafness experienced by every person in Martinique during the passage of the storm. The loss of life at Martinique is reported at 700; many persons were injured; property was destroyed to the value of about \$10,000,000; and all vessels about the island, some 50 sail of all classes, were wrecked. The commander of the S. S. "Esk" reports that he sailed from Barbados for Saint Lucia at 5.35 p. m., 17th, with northeast to east-northeast winds of force 3 to 4, and barometer at 30.17 (766); arrived at Saint Lucia at 6 a. m., 18th, with wind east-northeast, force 4, and barometer 30.19 (767); arrived at Saint Pierre, Martinique, at 1 p. m., with wind north-northeast, force 4, and barometer 30.10 (764); and left Martinique for Dominica, Windward Islands, at 2.35 p. m., with wind northeast, force 5, and barometer 30.07 (764). During the passage to Dominica northeast and east gales attaining hurricane force, heavy rain, violent squalls, and high seas from east-northeast were experienced, and the barometer fell to 29.96 (761) from 5 to 6 p. m. At Dominica the gale continued from east-northeast to east at force 10 to 11 until midnight, when the wind shifted to east-southeast, and from that point to southeast by 6 a. m. of the 19th, with slowly rising barometer and wind moderating in force.

Pursuing a west-northwest course the storm passed north of Grand Turk, Turks Islands, W. I., about midnight of the 21st. During the afternoon of the 21st there were indications of a cyclone approaching. In the evening the barometer fell steadily until 11.20 p. m., when it remained stationary at 29.21 (742) until midnight, after which it began to rise. From the force and changes of the wind it appeared that a cyclone had passed north of the islands, the vortex being probably 100 miles, or less, distant. During the afternoon there had been frequent rain squalls and a marked increase in the force of the wind. At 10.15 p. m. the first and only heavy gust of wind occurred, after which the wind decreased in force until midnight, at which time it again increased from the west. At 12.20 a. m., 22d, the wind was west by south and increasing in force; at 12.50 a. m. it was about west-southwest, and at 8 a. m. it was blowing from the southeast with heavy rain. At Grand Turk three persons were drowned, and the loss to property was confined to small houses and sailing vessels. From Grand Turk the storm-center passed to the Bahama Islands, a south hurricane being reported over Crooked Island, Bahamas, the evening of the 22d. During the 23d, 24th, and 25th a ridge of high barometer occupied the ocean off the south Atlantic coast of the United States, the pressure at Bermuda being 30.20 (767)

and above. This distribution of pressure had the apparent effect of preventing the cyclone from making the usual recurve to the north and northeast, and reports at hand indicate that it moved westward with diminished energy over extreme south Florida during the 24th, and passed thence into the Gulf of Mexico, where it probably dissipated, although reports indicate the presence of a cyclonic disturbance over the central and east Gulf until after the 29th. Early warning was received of the passage of this storm over the Windward Islands by telegrams to this office from Mr. Jos. Ridgeway, the observer at Saint Thomas.

The following diagram of a self-registering Richard barometer is of especial interest and value, inasmuch as it indicates the pressure changes attending the passage of the storm-center over Saint Pierre, Martinique.

Record of a self-registering Richard barometer, Saint Pierre, Martinique, August 18, 1891 (in millimeters).



Mr. Léon Sully, in a report accompanying the diagram, states that from 8.10 to 8.40 p. m. this barometer vibrated excessively, but a good aneroid barometer recorded every difference of pressure, and the passage of the center over Saint Pierre was clearly marked at 28.98 (736). The other minima (due to rapid oscillations varying in time from 2 to 3 seconds to 2 to 3 minutes) indicated clearly the passage of secondary whirls, rendered evident by the terrific noise of tiles and broken roofs; this fact was corroborated on the following day by the appearance of certain broken trees which could not have been bent in the way they were except by a strong gyratory movement. Moreover, in certain places in the country

there were long lanes or paths where the destruction was greater than elsewhere.

A second storm of tropical or subtropical origin advanced from the southeastward toward Bermuda during the 26th and passed east of that island during the 27th. By the morning of the 28th it had passed north of the 35th parallel, after which it apparently united with low area IX which occupied the Gulf of Saint Lawrence the morning of the 29th. For two days preceding the passage of this storm over the latitude of Bermuda the wind had been northeast, force 1 to 3, at that island. At 7 a. m., 27th, the wind was northeast, force 6; by 8 a. m. the wind had shifted to northwest, force 6, and it continued to blow from that point, with heavy rain squalls, until noon, when it shifted to west-northwest, to west at 3 p. m., to west-southwest at 6 p. m., and to southwest at 9 p. m. The barometer fell steadily to 29.60 (752) at 12.30 p. m., after which it began to rise. No damage was caused to shipping or buildings at Bermuda.

OCEAN ICE.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for August during the last 10 years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
August, 1882	46 50	46 00	August, 1882	46 50	46 00
August, 1883	43 26	51 41	August, 1883	48 00	44 00
August, 1884	43 24	48 44	August, 1884	47 50	43 50
August, 1885	43 48	52 04	August, 1885	48 03	42 45
August, 1886	48 35	48 46	August, 1886	50 00	48 00
August, 1887	42 21	49 51	August, 1887	48 06	40 00
August, 1888	Straits of Belle Isle		August, 1888	51 33	55 00
August, 1889	43 34	48 35	August, 1889	53 00	45 00
August, 1890	42 30	50 31	August, 1890	50 13	39 10
August, 1891	44 07	52 05	August, 1891	47 32	42 45
Mean	45 01	50 25	Mean	49 06	44 39

* Isolated field ice in N. 58°, W. 40°.

The above table shows that for August, 1891, ice was reported about 1° south and about 2° east of the average southern and eastern limits of ice for the corresponding month of the last 9 years. The southernmost ice reported was a small iceberg on the 22d, and the easternmost ice was a piece of field ice on the 2d in the positions given in the table. The ice noted for the dates named was the only ice reported south of the 49th parallel. From the Straits of Belle Isle to the 50th meridian icebergs were reported throughout the month. Although ice is not commonly encountered in quantities along the trans-Atlantic steamship routes in August reports indicate an unusual deficiency over and near the Grand Banks for the current month. The limits of the region within which icebergs and field ice were reported for August, 1891, are shown on Chart I by ruled shading.

OCEAN FOG.

The limits of fog-belts west of the 40th meridian, as determined from reports of shipmasters, are shown on Chart I by dotted shading. Near the Banks of Newfoundland fog was reported on 23 dates; between the 55th and 65th meridians on 15 dates; and west of the 65th meridian on 10 dates. Compared with the corresponding month of the last 3 years the dates of occurrence of fog near the Grand Banks numbered 1 more than the average; between the 55th and 65th meridians 5 more than the average; and west of the 65th meridian 1 more than the average.

The fog noted by shipmasters and that reported by Weather Bureau observers along the New England and New Jersey coasts generally occurred in the east quadrants of general storms which advanced from the westward.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for August, 1891, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest in the Colorado Desert, California, and the lower Gila valley, Arizona, where it was above 95, and the mean values were above 80 on the Atlantic coast south of the 33d parallel, along the Gulf coast, over the greater part of east and south Texas, and from southwest Arizona over the San Joaquin and Sacramento valleys. The mean temperature was lowest in the lower Saint Lawrence valley, and at mountain stations in central Colorado, where it was 55 or below, and the mean readings were below 60 along the immediate Pacific coast north of San Francisco, Cal., and north of a line traced from Alberta south of east to the Gulf of Saint Lawrence.

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was generally above the normal along the immediate Atlantic coast, over the Lake region, in the middle and upper Rio Grande valleys, and along the Pacific coast and thence over the west part of the middle and northern plateau regions. In the central valleys and along the Saint Lawrence River the month was cooler than usual. The greatest departure above the normal temperature occurred along the Pacific coast and on the south New England and Nova Scotia coasts, where it was more than 2, and at stations on the north Pacific coast the departure was 4. The most marked departure below the normal temperature was noted in the interior of the west Gulf states, in the middle Ohio valley, and southeast Iowa, where it was more than 2, and it exceeded 3 in north Louisiana and south Arkansas.

At stations on the Pacific coast and at Hatteras, N. C., the month was the warmest August on record. On the north Pacific coast the mean temperature was from 1 to 2 above the highest mean previously reported for August, noted in 1884 and 1888; at San Francisco, Cal., the mean was 0.4 above that of 1890; and on the south Pacific coast the mean was 1 to 2 above the record of 1885 and 1888. At Shreveport, La., the mean temperature was as low, and at Abilene, Tex., it was lower than previously noted for August.

TEMPERATURE, JANUARY TO AUGUST.

For the period January to August, 1891, inclusive, the mean temperature averaged about normal in the middle, south Atlantic, and east Gulf states, the Rio Grande and upper Mississippi valleys, the Ohio Valley and Tennessee, and along the middle and south Pacific coasts. In New England, the Lake region, the extreme northwest, and over the northern plateau region the mean temperature was about 1 above the normal; at Key West, Fla., on the eastern slope of the Rocky Mountains, and over the southern and middle plateau regions it averaged about 2 below the normal, and in the west Gulf states and the Missouri Valley it averaged about 1 below the normal for the period named.

MAXIMUM TEMPERATURE.

The maximum temperature was highest in the Colorado Desert, California, and in the lower Gila valley, Arizona, where it rose above 120; it was above 110 in adjoining parts of southeast California and west Arizona, and in the San

Joaquin and Sacramento valleys, California; and it was above 100 in Texas west of the 98th meridian, thence westward over extreme south New Mexico and southern Arizona, and thence northwest over the central valleys of California. It was also above 100 in the valley of the Columbia River in southeast Washington. Reports from voluntary observers show maximum temperature above 100 in all states and territories, except in New England and along the Atlantic coast. The lowest maximum temperature was reported on the coast of north California and in extreme northwest Washington, where it was below 75, and the maximum values were below 80 on the coast of eastern Maine.

MINIMUM TEMPERATURE.

The lowest minimum temperature reported by a regular station of the Weather Bureau was 32 at Saint Vincent, Minn., and the temperature fell below 40 in the upper and middle Missouri and Red River of the North valleys and in north Iowa. The minimum temperature was highest in the lower Colorado and Gila valleys and over the Florida Peninsula, where it was 70 or above.

PERIODS OF HIGH TEMPERATURE.

A warm wave appeared over the Dakotas on the 7th, extended over the Lake region and the Ohio Valley during the 8th and 9th, and reached the middle Atlantic states and New England on the 10th, where the temperature continued exceptionally high until after the 12th. At a number of stations in the upper Mississippi valley, the Lake region, New York, and south New England this warm wave was attended by the highest temperature ever noted for August, and a large number of deaths and prostrations were caused by the excessive heat. Very warm weather prevailed over Missouri, Kansas, and Indian Territory from the 18th to 20th. During the third decade of the month exceptionally warm weather prevailed on the Pacific coast, and at a number of stations in central and north California, Oregon, and south Washington the maximum temperature was the highest ever reported for August.

PERIODS OF LOW TEMPERATURE.

On the 23d a cool wave extended from Montana and the Dakotas to north Texas. On the 24th this cool wave extended over the upper and middle Mississippi valleys, and reached the Ohio Valley and the east Gulf states by the 25th. This cool wave was attended by the lowest temperature ever noted for August in the central valleys. On the 26th a cool wave appeared over Manitoba and North Dakota, and by the 27th it had extended over South Dakota and Minnesota, on the 28th over the Lake region and Ohio Valley, and on the 29th to the middle Atlantic coast. This cool wave was attended by the lowest temperature ever reported for August at stations in the Lake region, the Ohio Valley, and Virginia.

TEMPERATURE RANGES.

The greatest daily ranges of temperature are shown in the table of miscellaneous meteorological data. The greatest monthly ranges occurred over the middle Missouri valley, where they exceeded 60, whence they decreased eastward to less than 30 on the southeast New England coast, southeastward to less than 30 along the immediate south Atlantic coast and over the Florida Peninsula, southward to less than 30 along the immediate west Gulf coast, southwestward to less than 30 on the extreme south Pacific coast, and westward to less than 30 along the immediate Pacific coast north of the 40th parallel.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for August for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for August, 1891; (4) the departure of the current month from the normal;

(5) and the extreme monthly mean for August, during the period of observation and the years of occurrence:

State and station.	County.	(1) Normal for the month of Aug.	(2) Length of record.	(3) Mean for Aug., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for August.			
						Highest.	Year.	Lowest.	Year.
Arkansas.			Years						
Lead Hill.....	Boone.....	77.9	9	77.7	-0.2	81.0	1886	75.5	1882
California.									
Sacramento.....	Sacramento..	71.4	38	69.0	-2.4	76.0	1866	66.2	1887
Connecticut.									
Middletown.....	Middlesex...	73.8	19	70.0	-3.8	73.0	1870	65.9	1861
Florida.									
Merritts Island...	Brevard.....	81.2	9	83.4	+2.2	83.8	1883	78.8	1889
Georgia.									
Forayth.....	Monroe.....	78.8	17	78.7	-0.1	82.4	1878	73.2	1885
Illinois.									
Peoria.....	Peoria.....	75.4	35	73.2	-2.2	80.5	1881	70.1	1866
Riley.....	McHenry.....	68.7	35	67.8	-0.9	73.4	1867	64.1	1885
Indiana.									
Vevay.....	Switzerland..	74.9	25	72.2	-2.7	80.7	1881	69.9	1875
Iowa.									
Cresco.....	Howard.....	68.9	18	65.8	-3.1	72.6	1881	63.1	1885
Monticello.....	Jones.....	70.0	37	68.1	-1.9	77.1	1861	64.3	1863
Logan.....	Harrison.....	73.4	17	72.1	-1.3	79.6	1881	66.2	1873
Kansas.									
Lawrence.....	Douglas.....	75.3	23	72.5	-2.8	83.4	1874	71.1	1884
Wellington.....	Sumner.....	76.7	12	.....	.....	82.6	1881	70.1	1884
Louisiana.									
Grand Coteau....	Saint Landry..	81.3	8	.....	.....	83.6	1883	78.9	1889
Maine.									
Orono.....	Penobscot....	65.3	21	66.2	+0.9	67.5	1881	63.1	1874
Maryland.									
Cumberland.....	Allegany.....	69.8	32	70.5	+0.7	75.7	1871, '72	63.6	1866
Massachusetts.									
Amherst.....	Hampshire....	67.3	55	68.5	+1.2	71.6	1872	63.5	1866
Newburyport.....	Essex.....	66.9	13	68.3	+1.4	69.5	1882	65.3	1889
Somerset.....	Bristol.....	71.6	19	74.7	+3.1	75.0	1877	68.6	1874
Michigan.									
Kalamazoo.....	Kalamazoo....	69.2	14	70.0	+0.8	73.0	1881	63.8	1885
Thornville.....	Lapeer.....	69.3	14	68.8	-0.5	74.5	1881	64.7	1885
Minnesota.									
Minneapolis.....	Hennepin....	67.9	26	67.4	-0.5	72.3	1881	63.8	1885
Montana.									
Fort Shaw.....	Lewis & Clarke	64.8	21	.....	.....	69.8	1882	53.7	1873
New Hampshire.									
Hanover.....	Grafton.....	65.8	45	64.6	-1.2	70.4	1881	59.2	1885
New Jersey.									
Moorestown.....	Burlington..	72.0	28	71.9	-0.1	76.1	1864	68.1	1883
South Orange.....	Essex.....	70.7	20	70.8	+0.1	74.5	1877	68.1	1883, '89
New York.									
Cooperstown.....	Otsego.....	65.5	37	66.0	+0.5	71.5	1877	61.0	1861
Palermo.....	Oswego.....	66.8	31	67.3	+0.5	71.6	1877	61.6	1885
North Carolina.									
Lenoir.....	Caldwell.....	73.2	18	72.6	-0.6	77.0	1877	70.0	1890
Ohio.									
N'th Lewisburgh..	Champaign..	70.7	59	71.9	+1.2	75.0	1880	64.0	1876
Wauseon.....	Fulton.....	69.3	21	69.9	+0.6	72.8	1872	63.0	1870
Oregon.									
Albany.....	Linn.....	65.7	13	67.2	+1.5	68.7	1888	62.5	1881
Eola.....	Polk.....	64.9	21	66.4	+1.5	68.6	1870	61.2	1881

Deviations from normal temperature—Continued.

State and station.	County.	(1) Normal for the month of Aug.	(2) Length of record.	(3) Mean for Aug., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for Aug.			
						Highest.	Year.	Lowest.	Year.
Pennsylvania.			Years						
Dyberry.....	Wayne.....	64.3	23	65.0	+0.7	68.3	1872	58.4	1866
Grampian Hills...	Clearfield....	67.5	27	67.5	0.0	73.1	1881	62.1	1866
Wellaborough...	Tioga.....	65.7	12	62.0	-3.7	71.3	1881	62.0	1891
South Carolina.									
Statesburgh.....	Sumter.....	76.7	10	75.3	-1.4	79.7	1881	73.5	1889
Tennessee.									
Austin.....	Wilson.....	78.6	20	76.4	-2.2	84.6	1881	75.8	1889
Texas.									
New Ulm.....	Austin.....	82.4	19	81.8	-0.6	84.4	1873	79.4	1879, '82
Vermont.									
Stratford.....	Orange.....	67.5	18	67.0	-0.5	72.6	1884	63.9	1885
Virginia.									
Birdsneat.....	Northampton	76.5	23	77.6	+1.1	80.1	1877, '78	65.3	1871
Washington.									
Fort Townsend...	Jefferson....	61.4	18	61.2	-0.2	64.3	1874	58.9	1876
Wisconsin.									
Madison.....	Dane.....	68.9	19	68.4	-0.5	72.2	1878	64.2	1885

FROST.

Attending a cool wave with unprecedented low temperature for the season in the Gulf States and from the Mississippi River to the Rocky Mountains, frost was reported from the Missouri and Arkansas valleys to the Lake Superior region from the 21st to 24th. In the states of the middle Missouri and extreme upper Mississippi valleys the frost of this period damaged crops and tender vegetation. During the 28th and 29th a cool wave extended over the Lake region and thence over the Ohio Valley and the middle Atlantic states, attended at stations in the Lake region, the Ohio Valley, and Virginia by the lowest temperature ever noted for August, and frost from Manitoba and the Dakotas over the Lake region to extreme western New York. On the 28th temperature below freezing was reported in north and west-central parts of Wisconsin, and on the 29th ice $\frac{1}{2}$ inch thick was reported at Crandon, Wis.

Records for the last 10 years show the occurrence in August of damaging frost in Michigan for 5 years, in the Dakotas for 4 years, in New York, Minnesota, and Pennsylvania for 3 years, in Wisconsin, Nebraska, and Iowa for 2 years, and in Montana, Illinois, Massachusetts, New Hampshire, and Vermont for one year.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada, for August, 1891, as determined from the reports of nearly 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The monthly precipitation was greatest in areas from the lower Missouri valley to the south Atlantic states and Florida. In southern Virginia and thence over the south Atlantic states, in west-central and extreme southern Florida, and from north-central Missouri over south-central Iowa it exceeded 10.00, and more than 8.00 was reported in areas in the middle Ohio valley, southeast Kentucky, and northern and eastern Tennessee. Over the greater part of California and at stations in the middle plateau region no precipitation was reported, and over the greater part of the middle and northern plateau regions, on the northeast slope of the Rocky Mountains, and in areas in south Texas, Indian Territory, Kansas, east Nebraska, the

lower Mississippi valley, and on the east Gulf coast less than 1.00 fell.

A notable feature of the month was the distribution of precipitation in Arizona and southern California. In Arizona the rainfall exceeded 5.00 in the mountains south of Prescott and in the southeastern part of the territory, while at points in the Gila Valley no rain fell. In southern California heavy rain storms, resulting in destructive floods, occurred in the mountains in the southwest part of San Bernardino county and in San Diego county, while on the neighboring coast no precipitation occurred. The irregular distribution of precipitation from the Missouri Valley to the Atlantic coast was also due to the heavy downpours of rain in limited areas which characterize summer storms.

DEPARTURES FROM NORMAL PRECIPITATION.

East of the Rocky Mountains the areas of excess and deficiency were irregularly distributed. The monthly precipitation was generally in excess of the normal along the Pacific coast, over the northern plateau region and the east part of middle plateau region, in the upper Mississippi and lower Ohio valleys, in adjoining parts of northeast Texas and north-west Louisiana, over the northern part of the Lake region, in

the upper and middle Saint Lawrence valleys, and in areas in the Atlantic coast states; elsewhere it was deficient. The greatest excess was noted at Key West, Fla., where it exceeded 5.00; it exceeded 4.00 at Savannah, Ga., and Wilmington, N. C., and was more than 2.00 at New Haven, Conn., Albany, N. Y., in southwest Ontario, and in an area extending from central Indiana to southeast Iowa and northeast Missouri. The most marked deficiency occurred from the Rio Grande River to eastern Kansas, along the middle and east Gulf coasts, at Jacksonville, Fla., and over Cape Breton Island, where it was more than 2.00.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: Key West, Fla., 210; Spokane Falls, Wash., 180; upper lake region, 132; south Atlantic states, 126; upper Mississippi valley, 125; north Pacific coast, 113; northeast slope of the Rocky Mountains, 111. In districts where the precipitation was deficient the percentage of the normal was about as follows: southern plateau region, 23; Rio Grande Valley, 34; east Gulf states, 37; southeast slope of the Rocky Mountains, 38; middle-eastern slope of the Rocky Mountains, 55; Missouri Valley, 57; middle plateau region, 62; west Gulf states, 69; lower lake region, 80; New England, 90; Ohio Valley and Tennessee, 92. On the south Pacific coast no precipitation was reported, and an entire absence of rainfall in that region and in the central valleys of California is not unusual in August. On the middle Pacific coast, in the extreme northwest, and in the middle Atlantic states the monthly precipitation averaged about normal.

YEARS OF GREATEST AND LEAST PRECIPITATION FOR AUGUST.

The greatest precipitation ever reported for August occurred at Wilmington, N. C., Statesburgh, S. C., Forsyth, Ga., Key West, Fla., Keokuk, Iowa, Denver, Colo., and Fort Townsend, Wash., in 1891; on the north Pacific coast in 1889; in the lower Missouri, lower Ohio, and lower Mississippi valleys in 1888; over the northern plateau in 1887; in the upper Mississippi valley north of the 39th parallel in 1885; along the east Gulf coast in 1881; along the Pacific coast between the 38th and 45th parallels in 1879; and in Maine in 1877.

The least precipitation ever reported for August occurred at Pensacola, Fla., Lead Hill, Ark., and Concordia, Kans., in 1891; in Colorado, New Mexico, and western Texas in 1889; over the northern plateau region in 1888; on the north Pacific coast in 1885; in eastern New England in 1883; from southeastern Wyoming over the middle Missouri valley in 1882; from Lake Erie over Virginia and North Carolina in 1881; and over the greater part of New York in 1876.

In 1891, when the monthly precipitation was the greatest ever reported for August at stations in the south Atlantic states, over extreme southern Florida, in the upper Mississippi valley, over the east part of the middle plateau, and in west Washington, it was the least ever noted for that month at points on the east Gulf coast, in north Arkansas, and northeastern Kansas; in 1889 it was the greatest on record on the north Pacific coast and the least over the east part of the southern plateau region; in 1888 it was greatest in the south-central valleys and least over the northern plateau region; in 1885 it was greatest in the upper Mississippi valley and least on the north Pacific coast; and in 1881 it was greatest on the east Gulf coast and least from Lake Erie to the Virginia and North Carolina coasts.

PRECIPITATION, JANUARY TO AUGUST.

For the period January to August, 1891, inclusive, the precipitation averaged about normal in New England, the south Atlantic and west Gulf states, the Ohio Valley and Tennessee, the upper lake region, the upper Mississippi and Missouri valleys, on the southeast slope of the Rocky Mountains, over the middle and northern plateau regions, and along the Pacific coast. On the northeast slope of the Rocky Mountains the precipitation averaged about one-third greater, and in the

middle Atlantic states, the extreme northwest, and on the middle-eastern slope of the Rocky Mountains it was one-tenth to two-tenths greater than usual. At Key West, Fla., on the east Gulf coast, in the Rio Grande Valley, the lower lake region, and over the southern plateau region the precipitation was eight to nine-tenths of the usual amount for the period named.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for August for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for August, 1891; (4) the departure of the current month from the average; (5) and the extremes for August during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Aug.	(2) Length of record.	(3) Total for Aug., 1891.	(4) Departure from average.	(5) Extremes for Aug.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		Inches	Years	Inches	Inches.	Inches.		Inches.	
Lead Hill	Boone	6.02	9	2.37	-3.65	11.53	1888	2.37	1891
California.									
Sacramento	Sacramento ..	T.	41	0.00	-T.	0.08	1864	0.00	*
Connecticut.									
Middletown	Middlesex	5.40	29	3.52	-1.88	10.22	1867	1.16	1865
Florida.									
Merritts Island ..	Brevard	6.26	13	3.65	-2.61	15.77	1880	1.15	1883
Georgia.									
Forsyth	Monroe	4.79	17	6.05	+3.26	8.05	1891	2.50	1888
Illinois.									
Peoria	Peoria	3.04	35	3.71	+2.67	9.04	1862	0.57	1883
Riley	McHenry	4.02	40	1.95	-2.07	15.73	1850	0.77	1889
Indiana.									
Logansport	Cass	3.13	17	3.18	+0.05	6.30	1886	0.67	1881
Vevay	Switzerland ..	3.26	26	6.52	+3.26	10.90	1879	0.02	1889
Iowa.									
Cresco	Howard	3.16	18	2.63	-0.53	8.34	1884	0.92	1889
Monticello	Jones	3.87	26	4.11	+0.24	8.54	1885	0.22	1889
Logan	Harrison	4.32	24	3.31	-1.01	5.15	1889	0.61	1885
Kansas.									
Lawrence	Douglas	3.85	26	1.18	-2.67	9.07	1888	0.09	1882
Wellington	Sumner	3.00	12	.....	.....	5.15	1888	0.61	1885
Louisiana.									
Grand Coteau	St. Landry ..	3.96	8	.....	.....	8.07	1888	0.42	1883
Maine.									
Orono	Penobscot	3.64	21	4.67	+1.03	7.36	1885	0.53	1883
Maryland.									
Cumberland	Allegany	3.26	20	3.44	+0.18	8.09	1882	0.31	1881
Massachusetts.									
Amherst	Hampshire	4.43	55	4.70	+0.27	12.13	1856	0.25	1882
Newburyport	Essex	3.64	13	2.04	-1.60	7.57	1887	0.75	1883
Somerset	Bristol	4.24	19	2.12	-2.12	8.08	1880	0.58	1882
Michigan.									
Kalamazoo	Kalamazoo	2.69	15	3.24	+0.55	8.94	1885	0.31	1889
Thornville	Lapeer	3.12	14	3.07	-0.05	6.69	1877	0.35	1889
Minnesota.									
Minneapolis	Hennepin	3.74	25	3.78	+0.04	11.64	1869	0.47	1883
Montana.									
Fort Shaw	Lewis Clarke ..	0.84	21	.....	.....	3.01	1876	0.00	'71, '89
New Hampshire.									
Hanover	Grafton	3.76	46	3.21	-0.55	9.46	1849	0.12	1854
New Jersey.									
Moorestown	Burlington ..	4.65	28	4.52	-0.13	9.44	1882	0.81	1881
South Orange	Essex	5.29	20	5.51	+0.22	12.55	1875	1.10	1886
New York.									
Cooperstown	Otsego	3.88	37	4.26	+0.38	9.46	1856	0.63	1876
Palermo	Oswego	2.54	37	2.05	-0.49	6.40	1864	0.41	1866
North Carolina.									
Lenoir	Caldwell	5.90	19	5.90	0.00	10.20	1886	2.10	1877
Ohio.									
N. Lewisburgh ..	Champaign ..	3.60	19	1.70	-1.90	7.55	1882, '85	0.80	1884
Wauseon	Fulton	2.85	19	3.43	+0.58	4.86	1886	1.12	1884
Oregon.									
Albany	Linn	0.49	12	1.15	+0.66	1.62	1881	0.00	'85, '88
Eola	Polk	0.41	22	0.54	+0.13	1.81	1879	0.00	*
Pennsylvania.									
Dyberry	Wayne	3.85	19	4.75	+0.90	8.77	1885	0.95	1883
Grampian Hills ..	Clearfield	4.34	21	4.08	-0.26	8.19	1888	1.66	1883
Wellsborough ..	Tioga	5.27	12	3.57	-1.70	15.25	1885	0.83	1889
South Carolina.									
Statesburgh	Sumter	4.33	10	8.78	+4.45	8.78	1891	2.12	1886
Tennessee.									
Austin	Wilson	3.72	22	4.05	+0.33	7.80	1871	0.50	1881
Texas.									
New Ulm	Austin	3.17	19	2.43	-0.74	8.38	1878	0.09	1885
Vermont.									
Stratford	Orange	3.73	18	3.50	-0.23	8.85	1890	1.40	1882
Virginia.									
Birdsnest	Northampton ..	4.55	22	7.15	+2.60	11.25	1875	0.20	1869
Washington.									
Fort Townsend ..	Jefferson	0.80	17	2.52	+1.72	2.52	1891	0.00	1885
Wisconsin.									
Madison	Dane	3.28	20	1.41	-1.87	6.83	1882	0.56	1881

* Generally.

EXCESSIVE PRECIPITATION.

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported in the several states and territories for August during the last 22 years:

Excessive monthly precipitation.

State.	No. years noted.	State.	No. years noted.
Florida.....	18	Wisconsin.....	3
North Carolina.....	16	Kentucky.....	4
Georgia.....	15	Arkansas.....	4
South Carolina.....	10	Delaware.....	2
Alabama.....	9	Maine.....	2
Virginia.....	9	Mississippi.....	2
Texas.....	9	West Virginia.....	2
New York.....	9	Arizona.....	1
Kansas.....	7	Colorado.....	1
Louisiana.....	7	The Dakotas.....	1
Illinois.....	6	District of Columbia.....	1
New Hampshire.....	6	Minnesota.....	1
New Jersey.....	6	New Mexico.....	1
Indiana.....	6	Vermont.....	1
Iowa.....	6	California.....	1
Connecticut.....	5	Idaho.....	0
Ohio.....	5	Indian Territory.....	0
Massachusetts.....	5	Montana.....	0
Pennsylvania.....	5	Nevada.....	0
Missouri.....	5	Oregon.....	0
Maryland.....	4	Utah.....	0
Tennessee.....	4	Washington.....	0
Michigan.....	3	Wyoming.....	0
Nebraska.....	3		

Excessive daily precipitation.

State.	No. years noted.	State.	No. years noted.
Georgia.....	20	Wisconsin.....	11
Texas.....	19	Nebraska.....	9
Florida.....	18	Indiana.....	8
North Carolina.....	18	Maryland.....	8
South Carolina.....	17	New Hampshire.....	7
Pennsylvania.....	15	West Virginia.....	6
Iowa.....	15	Indian Territory.....	6
Missouri.....	14	Delaware.....	5
New York.....	14	Arizona.....	5
Tennessee.....	14	Kentucky.....	4
Massachusetts.....	13	Rhode Island.....	3
Illinois.....	13	Montana.....	3
Mississippi.....	13	Vermont.....	2
Alabama.....	12	Colorado.....	1
Ohio.....	12	Maine.....	1
Kansas.....	12	California.....	1
Michigan.....	12	District of Columbia.....	0
Connecticut.....	11	Idaho.....	0
The Dakotas.....	11	Nevada.....	0
Arkansas.....	11	New Mexico.....	0
Louisiana.....	11	Oregon.....	0
Minnesota.....	11	Utah.....	0
New Jersey.....	11	Washington.....	0
Virginia.....	11	Wyoming.....	0

Excessive hourly precipitation.

State.	No. years noted.	State.	No. years noted.
Texas.....	16	Alabama.....	4
Florida.....	14	Connecticut.....	4
Georgia.....	14	Kentucky.....	4
Tennessee.....	14	New Jersey.....	4
Pennsylvania.....	13	Massachusetts.....	3
Kansas.....	13	New Hampshire.....	3
Ohio.....	12	New Mexico.....	3
Iowa.....	11	Wisconsin.....	3
North Carolina.....	11	Maine.....	2
Michigan.....	10	Montana.....	2
South Carolina.....	10	Rhode Island.....	2
Virginia.....	10	Minnesota.....	2
The Dakotas.....	9	District of Columbia.....	1
Nebraska.....	9	Indian Territory.....	1
Illinois.....	8	Vermont.....	1
Indiana.....	8	West Virginia.....	1
New York.....	8	California.....	1
Maryland.....	7	Washington.....	1
Mississippi.....	7	Idaho.....	1
Louisiana.....	6	Nevada.....	0
Arizona.....	5	Oregon.....	0
Arkansas.....	5	Utah.....	0
Missouri.....	5	Wyoming.....	0
Colorado.....	4		

The following tables show, by states, the number of stations reporting monthly precipitation to equal or exceed 10.00; precipitation to equal or exceed 2.50 in 24 hours; and precipitation to equal or exceed 1.00 in 1 hour in August, 1891:

Monthly precipitation to equal or exceed 10.00.

State.	Number of stations.	State.	Number of stations.
South Carolina.....	13	Virginia.....	2
North Carolina.....	9	California.....	1
Georgia.....	5	Indiana.....	1
Missouri.....	4	Iowa.....	1
Tennessee.....	3	Kentucky.....	1
Florida.....	2	New York.....	1

Precipitation to equal or exceed 2.50 in 24 hours.

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Missouri.....	13	13-14, 14, 14-15, 18-19, 18-20, 19-20, 23-24, 25, 26, 26-27, 27, 27-28.	New York.....	6	20, 21, 23-24, 24-25, 27.
Georgia.....	10	23, 24, 25, 26, 26-27, 27, 27-28.	Florida.....	4	1-2, 12-13, 20, 29-30.
North Carolina.....	10	1, 2-3, 12, 22-23, 23-24, 25-26, 26.	Indiana.....	4	1-2, 3, 17, 20, 8, 20, 27.
Illinois.....	8	2-3, 10, 16, 16-17, 20, 20-21, 26-27.	Texas.....	4	2-3, 22-23.
Iowa.....	7	6, 10, 10-11, 16, 18, 18-19.	Pennsylvania.....	3	23, 24.
Kentucky.....	6	2, 17, 17-18, 18, 19, 22.	Tennessee.....	3	20, 20-21, 21-22.
New Jersey.....	6	21, 23-24.	Kansas.....	2	11, 15.
			Louisiana.....	2	4, 8-9.
			Virginia.....	2	3, 25.
			Wisconsin.....	2	11, 20.
			Arizona.....	1	27-28.
			Arkansas.....	1	21-22.
			Minnesota.....	1	12.
			Mississippi.....	1	6.

Precipitation to equal or exceed 1.00 in 1 hour.

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Iowa.....	10	1, 9, 10, 11, 17, 18, 20, 27.	North Carolina.....	3	1, 2, 4, 25.
Missouri.....	9	1, 11, 14, 15, 19.	South Dakota.....	2	10, 14, 19.
Georgia.....	8	4, 13, 22, 23, 25, 26, 27, 28.	Arkansas.....	2	2, 11.
Illinois.....	6	2, 9, 10, 20, 26.	Kentucky.....	2	2, 17.
Texas.....	5	2, 3, 11, 21.	Minnesota.....	2	13, 20.
Alabama.....	4	1, 13.	Mississippi.....	2	5, 7.
Arizona.....	4	5, 6, 14, 15, 17, 25, 28.	New York.....	2	15, 23.
Florida.....	4	4, 6, 22, 30.	North Dakota.....	2	7, 19.
Michigan.....	4	8, 17, 20.	South Carolina.....	2	13, 21.
Ohio.....	4	11, 18, 19.	Tennessee.....	2	17, 20.
Indiana.....	3	10, 12, 15.	California.....	1	12.
			Connecticut.....	1	28.
			Louisiana.....	1	13.
			Nebraska.....	1	18.
			New Jersey.....	1	23.
			Virginia.....	1	26.
			Washington.....	1	6.
			Wisconsin.....	1	11.

The following tables give exceptionally heavy daily, monthly, and hourly rainfalls reported for August during the last 22 years:

Daily (24 hours).

Station and state.	Amount.	Date.	Station and state.	Amount.	Date.
	Inches.			Inches.	
Campo, Cal.....	21.50	12, 1891	Johnstown, Va.....	7.70	18, 1879
Griffin, Ga.....	10.38	8, 1883	Marshall, Mo.....	7.48	18-19, 1891
Granbury, Ga.....	10.15	26, 1888	Central City, Ky.....	7.02	22, 1891
Fort Barrancas, Fla.....	9.75	29, 1878	Union Point, Ga.....	6.60	26-27, 1891
Hatteras, N. C.....	9.14	23, 1880	Carson, Iowa.....	6.50	9, 1889
Technumseh, Nebr.....	9.00	12, 1889	Hazlehurst, Miss.....	6.00	27, 1890
Elsworth, N. C.....	9.00	4, 1880	Phillips, Wis.....	6.00	8, 1890
New Orleans, La.....	8.90	20, 1888	Clarksville, Tenn.....	5.90	20, 1891
Mandeville, La.....	8.54	8, 1888	Camp Eagle Pass, Tex.....	5.50	2, 1891
Cape May, N. J.....	8.46	18, 1879	Washington, Ga.....	5.40	26, 1891
Kitty Hawk, N. C.....	8.14	15, 1883	Fort Smith, Ark.....	5.10	19-20, 1890
Vesper, Kans.....	8.10	19, 1890	Lillington, N. C.....	5.02	22-23, 1891
Grantsburgh, Wis.....	7.75	19-20, 1889			

*Cloudburst; rainfall not all measured.

Monthly.

Station and state.	Am't.	Year.	Station and state.	Am't.	Year.
	Inches.			Inches.	
Fort Barrancas, Fla.....	30.73	1878	Charleston, Ill.....	23.04	1882
Asheville, N. C.....	28.65	1887	New Smyrna, Fla.....	23.00	1871
Elsworth, N. C.....	28.33	1880	New Orleans, La.....	22.74	1888
Fort Barrancas, Fla.....	25.07	1879	Tarborough, N. C.....	22.73	1887
Maurepas, La.....	23.44	1888	Saint Augustine, Fla.....	21.50	1871
Newport, Fla.....	23.25	1872	Fairview, Fla.....	21.35	1871

One hour and less.

Station and state.	Amount.	Time.	Date.
	Inches.	h. m.	
Savannah, Ga.....	0.50	0 05	28, 1891
Indianapolis, Ind.....	0.45	0 05	19, 1891
New York, N. Y.....	0.43	0 05	18, 1887
Wilmington, N. C.....	0.43	0 05	4, 1891
Galveston, Tex.....	0.40	0 05	4, 1890
Kansas City, Mo.....	0.40	0 05	15, 1891
Eastport, Me.....	0.39	0 05	22, 1891
Galveston, Tex.....	0.35	0 05	2, 1890
Jupiter, Fla.....	0.35	0 05	28, 1891
Philadelphia, Pa.....	0.35	0 05	11, 1891
Saint Louis, Mo.....	0.35	0 05	20, 1891
Saint Paul, Minn.....	0.35	0 05	18, 1891
Atlanta, Ga.....	0.34	0 05	12, 1891
Dodge City, Kans.....	0.32	0 05	26, 1890
Memphis, Tenn.....	0.30	0 05	23, 1891
New York, N. Y.....	0.30	0 05	1, 1890
Washington, D. C.....	0.30	0 05	26, 1891
Norfolk, Va.....	0.28	0 10	20, 1888
Do.....	0.75	0 10	4, 1890
Galveston, Tex.....	0.60	0 10	30, 1891
Key West, Fla.....	0.59	0 10	4, 1888
New York, N. C.....	0.50	0 10	13, 1888
Cincinnati, Ohio.....	0.40	0 10	26, 1890
Cleveland, Ohio.....	0.40	0 10	4, 1890
New York, N. Y.....	0.40	0 10	21, 1888
Charleston, S. C.....	1.41	0 18	9, 1890
Lead Hill, Ark.....	1.00	0 18	2, 1882
Escanaba, Mich.....	1.27	0 20	11, 1877
Albany, N. Y.....	1.25	0 20	2, 1878
Nashville, Tenn.....	1.10	0 20	17, 1891
Emporium, Pa.....	1.05	0 20	5, 1890
Parkersburg, W. Va.....	1.01	0 20	1, 1890
Mossing Ford, Va.....	1.00	0 20	2, 1890
Louisville, Ky.....	1.26	0 23	20, 1878
Hardin, Colo.....	1.52	0 24	13, 1890
Galveston, Tex.....	1.55	0 25	17, 1871
Fort Smith, Ark.....	1.00	0 25	11, 1891
Colorado Springs, Colo.....	2.75	0 30	14, 1890
Mesquite, Tex.....	2.50	0 30	10, 1875
Wellaborough, Pa.....	1.95	0 30	21, 1885
Vevay, Ind.....	1.90	0 30	13, 1879
Granisburgh, Wis.....	1.88	0 30	7, 1889
Queensbury, N. Y.....	1.56	0 30	14, 1890
Mount Auburn, Ohio.....	1.52	0 30	26, 1880
Providence, R. I.....	3.50	0 35	6, 1878
Auburn, N. H.....	3.00	0 35	27, 1877
Hulmeville, Pa.....	2.20	0 35	25, 1880
Pittsburg, Pa.....	1.85	0 35	16, 1884
Cincinnati, Ohio.....	1.85	0 35	27, 1882
Jacksonville, Fla.....	3.72	0 41	20, 1873
Hudson, Wis.....	2.50	0 45	11, 1891
Detroit, Mich.....	2.48	0 45	31, 1878
Charlotte, N. C.....	2.01	0 45	3, 1890
Fort Union, N. Mex.....	2.34	0 50	12, 1883
Princeton, Mo.....	4.00	1 05	15, 1891
Campo, Cal.....	11.50	1 20	12, 1891
Plover, Wis.....	4.50	1 30	3, 1890
Carson, Iowa.....	6.50	4 00	9, 1889

Table of excessive precipitation, August, 1891.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.	Rainfall of 1 inch, or more, in one hour.
		Amt.	Time.
		Day.	Day.
	Inches.	Inches.	h. m.
Alabama.			
Auburn.....	1.25	1 15	13
Marion.....	1.10	0 30	13
Mobile.....	1.25	0 53	13
Tuscaloosa.....	1.45	1 00	1
Arizona.			
Bisbee.....	2.00	2 00	6
Do.....	2.05	2 00	17
Farley Camp.....	1.30	1 00	13
Do.....	3.25	27-28	26
Oro.....	1.10	1 00	25
Red Rock.....	1.50	1 00	5
Do.....	1.00	1 00	14
Arkansas.			
Dallas.....	2.75	21-22	.....
Fort Smith.....	1.00	0 25	11

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.	Rainfall of 1 inch, or more, in one hour.
		Amt.	Time.
		Day.	Day.
	Inches.	Inches.	h. m.
Arkansas—Continued.			
Helena (1).....	16.10	11.50	12
California.			
Campo.....	16.10	11.50	12
Connecticut.			
New London.....	1.00	1 00	28
Florida.			
Alva.....	1.84	0 35	4
Gainesville.....	2.63	12-13	.....
Key West.....	10.13	4.04	29-30
Miami.....	3.20	1-2	30
Saint Petersburg.....	13.32	2.10	1 00
Tampa.....	2.90	20	22
Tarpon Springs.....	1.17	1 00	6
Georgia.			
Augusta.....	1.23	0 55	13
Do.....	1.73	0 38	27
Camak.....	3.12	26-27	.....
Cordele.....	1.98	1 50	26
Forsyth.....	1.13	1 00	4
Fort Gaines.....	4.40	4 30	27
Gainesville.....	2.90	2 20	23
Macon.....	10.10	.....	.....
Monticello.....	2.85	23	.....
Milledgeville.....	2.83	2 50	25
Do.....	2.72	27	.....
Poulan.....	1.15	0 30	22
Quitman (2).....	3.70	25	.....
Savannah.....	11.54	1.30	1 00
Do.....	3.30	27-28	28
Union Point.....	11.81	26-27	.....
Washington.....	12.64	5.40	26
Waynesborough.....	11.35	3.82	24
Illinois.			
Aurora (1).....	2.39	2 35	9
Centralia.....	4.41	16-17	.....
Cockrell.....	1.20	1 00	10
East Peoria.....	3.12	26-27	.....
Louisville.....	3.30	2-3	.....
New Haven.....	3.22	16-17	.....
Olney (1).....	3.10	20	.....
Olney (2).....	2.51	20-21	.....
Oswego.....	1.00	1 00	20
Palestine.....	3.05	16	.....
Pana.....	2.00	1 15	2
Peoria (2).....	1.00	1 00	26
Rushville.....	2.56	0 55	10
Indiana.			
Columbus.....	3.02	3	.....
De Gonia Springs.....	3.00	17	.....
Evansville.....	1.00	1 00	10
Indianapolis.....	1.60	0 58	19
Marengo.....	4.00	1-2	.....
Seymour.....	1.48	0 40	16
Worthington.....	11.45	3.96	20
Iowa.			
Ames.....	3.47	10-11	.....
Ames (1).....	1.90	1 45	20
Do.....	1.25	0 30	27
Ames (2).....	2.01	2 00	20
Blakeville.....	3.00	10	.....
Carroll.....	1.22	0 25	17
Do.....	1.61	0 50	20
Charles City.....	3.10	1 00	10
College Springs.....	3.06	18	.....
Cordova.....	2.94	6	.....
Corning (1).....	2.88	18-19	.....
Do.....	3.16	18-19	.....
Corning (2).....	1.61	0 45	18
Des Moines.....	1.19	0 55	11
Independence.....	2.15	1 30	9
Maxon.....	13.02	3.60	10-11
Do.....	3.23	16	.....
Tipton.....	3.05	10-11	.....
Vinton.....	1.29	1 00	10
Kansas.			
Dodge City.....	3.30	11	.....
Emporia.....	2.60	15	.....
Fort Leavenworth (2).....	2.60	11	.....
Kansas City.....	2.34	1 00	15
Kentucky.			
Central City.....	19.76	5.02	17
Do.....	6.01	19	.....
Do.....	7.02	22	.....
Earlington.....	2.93	23	.....
Frankfort (2).....	2.82	17	.....
Louisville.....	2.81	2	.....
Paducah.....	2.60	17-18	.....
Princeton.....	2.70	18	.....
Louisiana.			
Amite City.....	3.10	4	.....
Lake Charles.....	2.90	8-9	.....
Monroe.....	1.88	1 10	13
Michigan.			
Alpena.....	1.54	1 00	8
Do.....	1.03	1 00	17
Fort Mackinac.....	2.81	8	.....
Harrisville.....	3.06	8	.....
Hudson.....	1.52	1 20	17
Marquette.....	1.28	1 00	20
Marshall.....	2.75	20	.....
May.....	2.60	27	.....

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
<i>Minnesota.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>A. M.</i>	
Crookston	3.23	6		1.05	0 55	13
Saint Paul				1.16	1 00	20
Do						
<i>Mississippi.</i>						
Logtown	2.70	3		1.85	1 00	7
Mayersville				1.79	1 15	5
Waynesborough (2)						
<i>Missouri.</i>						
Boonville	5.37	18-20				
Brunswick	4.00	13-14				
Carrollton	11.47	3-39	14-15	1.48	0 30	11
Do	4.23	18-19				
Centerville				1.30	1 00	11
Chillicothe (1)	3.70	14-15				
Chillicothe (2)	10.50					
Conception	3.86	13-14				
Fayette				1.09	0 45	14
Glasgow	3.08	19		1.70	1 00	14
Hermann				1.30	0 58	1
Kansas City				1.55	0 48	15
Do						
Kidder	2.70	14-15				
Lamonte (2)	2.92	19				
Langdon	2.88	14				
Liberty	4.55	18-19				
Marshall (2)	13.10	3-37	14-15			
Do		7-48	18-19			
Oregon (1)	2.71	14-15				
Princeton	4.80	14-15		4.00	1 05	15
Saint Joseph				1.27	0 30	11
Springfield				1.04	0 55	19
Steelville	13.10					
<i>Nebraska.</i>						
Norfolk				1.89	1 00	18
<i>New Jersey.</i>						
Dover	3.23	23-24				
Hanover	2.50	23-24				
Highland Park	3.60	23-24				
Junction	2.52	21				
Locktown	3.25	23-24				
New Brunswick	3.84	23-24		2.55	1 50	23
<i>New York.</i>						
Albany				1.05	0 30	15
Canton	3.21	21				
David's Island	2.80	24-25				
Fort Columbus	3.23	23-24				
New York, N. Y.	3.20	23-24		1.15	1 00	23
Potsdam	2.57	20				
Schoharie Depot	10.52	4-50	27			
<i>North Carolina.</i>						
Chapel Hill	11.71					
Charlotte	3.36	25-26				
Douglas	2.50	12				
Goldensborough	10.78					
Littlington	5.02	22-23				
Littleton	10.20					
Lumberton	10.64	3-27	2-3			
New Bern	11.57					
Pittsborough	2.50	1				
Raleigh	10.43	3-30	1	1.10	1 00	1
Smithfield	16.30	2-30	1	2.00	1 00	25
Do	4.50	26				
Southern Pines	10.58	3-65	26			
Wadesborough	2.55	23-24				
Wadeville	2.56	1				
Wilmington	11.96			1.02	1 00	1
Do				1.60	1 00	2
Do				1.06	1 00	4
<i>North Dakota.</i>						
Fargo				1.07	0 53	19
Fort Pembina				1.30	0 45	7
<i>Ohio.</i>						
Ashland				1.49	0 25	19
Gratiot				1.45	0 35	11
Kenton				1.45	0 35	11
Montpelier				1.31	0 49	18
<i>Pennsylvania.</i>						
Blooming Grove	3.10	23				
Phoenixville	3.61	24				
West Chester	2.69	24				
<i>South Carolina.</i>						
Aiken	14.09	2-30	27			
Allendale	10.11					
Batesburg	11.05					
Branchville	10.99	3.00	26			
Brewer Mine	10.19					
Columbia		2.65	26			
Cheraw (2)	10.55					
Evergreen		2.60	27			
Greenwood				1.20	0 30	21
Hardeeville	14.79	3.00	25			
Jacksonborough	14.59	3.47	24			
Kingsree	13.96	3.70	24			
Do		4.55	24			
Port Royal	14.00	3.55	13			
Do		3.05	24			
Saint Georges	10.61	3.00	20	2.22	1 30	13
Saint Matthews						
Trial	10.83					
Waterloo	11.89					

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
<i>South Dakota.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>A. M.</i>	
Fort Bennett				1.00	0 30	14
Sioux Falls				1.22	1 00	19
Tyndall				1.43	0 30	10
<i>Tennessee.</i>						
Clarksville	10.38	5.90	20	5.90	4 00	20
Grand Junction		5.65	21-22			
Greenville	10.04					
Nashville				1.10	0 20	17
Ridgely	10.03	3.49	20-21			
<i>Texas.</i>						
Brasoria		2.79	22-23			
Camp Eagle Pass		5.50	2	5.50	6 00	2
Corpus Christi		4.80	2-3	1.10	0 55	2
Do				2.40	0 50	3
Galveston		3.44	22-23			
Hansford				2.00	0 45	21
New Ulm				1.43	1 15	11
<i>Virginia.</i>						
Birdsnest		3.15	25			
Christiansburg	11.86					
Clarksville	13.41	3.95	3	1.62	1 00	26
Norfolk						
<i>Washington.</i>						
East Sound				1.44	1 00	6
<i>Wisconsin.</i>						
Ellsworth		3.00	20	2.50	0 45	11
Hudson		2.50	11			

Received too late to be used in general discussion for August, 1891.

<i>Nebraska.</i>						
Alliance				1.28	0 30	17
<i>New York.</i>						
Factoryville				1.45	1 00	23
<i>Pennsylvania.</i>						
Emporium				1.64	1 00	4
Girardville		3.90	23			
Hamburg				1.08	0 45	23
Kennett Square		2.61	24	2.15	0 45	12
Lewisburg		4.09	23			
Pottstown		2.87	24			
Quakertown		2.61	24			
State College				1.95	1 00	14
Reading	11.77					
Smiths Corners	10.18					

Received too late for publication in July, 1891.

<i>Louisiana.</i>						
Coushatta (2)		2.87	6			
<i>Mississippi.</i>						
Palo Alto	15.58			2.06	2 00	17
<i>North Dakota.</i>						
Jamestown		3.57	12			
<i>South Carolina.</i>						
Kingsree		3.05	28			
<i>West Virginia.</i>						
Wheeling (1)		3.21	18			

*Incomplete; cloud-burst carried away rain-gauge.

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during August, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
<i>Inch.</i>			<i>Inch.</i>		<i>Inch.</i>	
Atlanta, Ga.	0.35	18	0.55	18	0.55	18
Bismarck, N. Dak.	0.20	5	0.35	5	0.58	5
Boston, Mass.	0.15	28	0.21	28	0.34	28
Buffalo, N. Y.	0.20	9	0.30	9	0.30	9
Cincinnati, Ohio	0.15	17	0.25	17	0.50	17
Chicago, Ill.	0.25	20	0.30	20	0.50	23
Cleveland, Ohio	0.12	14	0.19	14	0.46	14
Denver, Colo.	0.20	17	0.37	17	0.80	17
Detroit, Mich.	0.09	30	0.13	30	0.38	30
Dodge City, Kans.	0.34	12	0.50	12	1.06	12
Duluth, Minn.	0.15	20	0.20	20	0.55	20
Eastport, Me.	0.40	12	0.50	12	0.75	22
Galveston, Tex.	0.39	22	0.60	22	0.91	22-23
Indianapolis, Ind.	0.45	19	0.65	19	1.00	19
Jacksonville, Fla.	0.25	26	0.38	27	0.90	14
Jupiter, Fla.	0.35	13	0.45	13	0.55	30
Kansas City, Mo.	0.40	15	0.80	15	1.55	15
Key West, Fla.	0.30	30	0.60	30	1.70	30
Marquette, Mich.	0.23	20	0.36	20	1.28	20

Maximum rainfall in one hour or less—Continued.

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
Memphis, Tenn.	Inch.		Inch.		Inch.	
New York, N. Y.	0.15	30	0.20	22, 30	0.70	30
New Orleans, La.	0.30	23	0.40	23	1.15	23
Norfolk, Va.	0.22	7	0.24	7	0.38	7
Philadelphia, Pa.	0.30	26	0.46	26	1.62	26
Philadelphia Water Works	0.36	26	0.50	26	0.60	1
Pittsburg, Pa.	0.12	23	0.23	23	0.75	23
Portland, Oregon	0.10	11	0.15	11	0.37	11
Saint Louis, Mo.	0.03	4	0.05	4	0.20	4
Saint Paul, Minn.	0.35	11	0.60	11	0.80	11
San Diego, Cal.	0.35	20	0.62	20	1.16	20
San Francisco, Cal.						
Savannah, Ga.	0.50	26	0.75	26	1.70	26
Washington, D. C.	0.22	24	0.32	24	0.70	24
Wilmington, N. C.	0.43	4	0.64	2	1.60	2

* Less than 0.05 in 1 hour.

HAIL.

Description of the more severe hail storms of the month is given under "Local storms." Hail was reported as follows: 1st, Colorado, New Mexico. 2d, Colorado, Indiana, New Mexico, North Dakota. 3d, Colorado, Nebraska, Wyoming. 4th, Colorado, Oregon, South Dakota, Wyoming. 5th, Colorado, Montana, North Dakota, Wisconsin, Wyoming. 6th, Minnesota, North Dakota, Washington. 7th, Colorado, Minnesota, New Hampshire, New York, North Dakota, Wisconsin, Wyoming. 8th, Kansas. 9th, Colorado, Illinois, Michigan.

WINDS.

The prevailing winds in August, 1891, are shown on Chart II by arrows flying with the wind. Over the Atlantic coast states, the Florida Peninsula, the Gulf States, the Mississippi and middle and lower Missouri valleys, the south part of the Lake region, and the southern plateau southeast to southwest winds were most frequently noted; over the north part of the Lake region and thence westward over Montana they were generally from northwest to northeast; along the middle and south Pacific coasts from southwest to northwest; and on the north Pacific coast, and over the middle and northeast slopes of the Rocky Mountains, variable.

HIGH WINDS.

[In miles per hour.]

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 21st, 82, sw., at Green Mountain, Me.; 80, w., at Mount Washington, N. H. 28th, 52, w., at Mount Killington, Vt.

LOCAL STORMS.

1st.—Heavy rain flooded farm lands near Baltimore, Md. In Franklin county, Pa., lightning struck a barn, killing 2 children. A severe storm was reported at Checotah, Ind. T., about 11 p. m.; several buildings were destroyed, stock killed, and damage caused to growing crops.

2d.—A thunderstorm, with exceptionally heavy rainfall, passed northeast over Louisville, Ky., in the evening. A severe windstorm was reported in Anne Arundel county, Md., in the afternoon.

3d.—During a heavy thunderstorm at Lexington, N. C., 2 persons were stunned, and a tree was struck by lightning. Heavy rain flooded lowlands west of Custer Station, Mont.

4th.—At Portland, Oregon, a thunderstorm, with hail, occurred in the evening. Heavy thunder, rain, and hail storms caused destruction to live stock and crops in Miner and McCook counties, S. Dak.

5th.—Heavy rain flooded small streams and lowlands in Dauphin and Chester counties, Pa., and Carroll county, Md. During a heavy thunderstorm in the evening at Churchs Ferry, N. Dak., 2 buildings were struck by lightning. An

10th, Iowa, New York, South Dakota. 11th, Colorado, Iowa, Maryland, Minnesota, Nebraska, New Jersey, New York, Oregon. 12th, Connecticut, Maryland, Texas. 13th, Georgia, Illinois, Iowa, Minnesota, Missouri, Nebraska, North Dakota, Wisconsin. 14th, Colorado, Illinois, Indiana, Missouri, Nebraska, Ohio, South Dakota, West Virginia. 15th, Colorado, Connecticut, Illinois, Indiana, Minnesota, Montana, Virginia. 16th, Indiana, Ohio, Wisconsin. 17th, Colorado, Wyoming. 18th, Colorado, Iowa, Nebraska. 19th, Nebraska, New York, North Dakota. 20th, Illinois, Kentucky, Nebraska. 21st, Colorado, Kansas, Missouri, New Jersey, Texas, Wyoming. 23d, Virginia. 24th, Nebraska. 25th, California, Colorado, Minnesota, Montana, South Dakota. 26th, Texas. 27th, Colorado. 28th, Arizona, Colorado, North Carolina, South Dakota. 29th, Colorado, Iowa, North Dakota, Wisconsin. 30th, Michigan. 31st, New York. Sleet fell in Colorado on the 17th, 29th, and 30th.

SNOW.

Snow was reported in the Paradise Mountains, 40 miles north of Winnemucca, Nev., on the 6th; in the mountain ranges of Colorado on the 22d and 23d; at Cumberland, Barron Co., Wis., the evening of the 22d and the morning of the 23d; and at Buffalo, N. Y., on the 28th.

Records for August of the last 10 years show that snow fell at Harrisburg, Pa., and along the upper Sault de Ste. Marie river, Mich., in 1890; at Mammoth, Pa., in 1889; at Hartford, Conn., and Wilkes Barre, Pa., in 1885; and at Sandusky, Ohio, and Grand Haven, Mich., in 1882.

unusually heavy rainstorm was reported in Stark county, N. Dak. A heavy hailstorm occurred at night at Boulder, Jefferson county, Mont. At Fort Assiniboine, Mont., a heavy thunderstorm begun about 11 p. m. and continued about 3 hours; the storm was reported the most severe ever experienced in that section. A heavy rain and hail storm in the afternoon damaged standing grain at Lander, Wyo.

6th.—Several buildings were struck by lightning in Oxford and Androscoggin counties, Me. Near Crookston, Minn., a heavy rain and hail storm moved southeast in a path about 1½ mile in width and 8 miles in length, causing injury to grain. Heavy thunderstorms occurred in Manitoba; several fatalities were reported. At Dickinson, N. Dak., a wind, rain, and hail storm at night injured grain.

7th.—A heavy thunder, rain, and hail storm moved southeast over Manchester, N. H., in the afternoon; hail fell in a path about 2 miles in width and 3 to 4 miles in length; the hailstones ranged to ¾ inch in diameter, were spherical in form, and generally of clear, solid ice; 0.50 inch of rain and melted hail fell in ten minutes, and the temperature fell 20° in 35 minutes. Severe thunderstorms occurred in Connecticut. An unusually severe thunderstorm moved north over Augusta, Ga., in the evening; the wind reached a velocity of 40 miles per hour from the southeast, large trees were prostrated, and the temperature fell 26° in 4 hours. Heavy rain and hail storms were reported in northwest Minnesota in the evening. Thunderstorms, with heavy rain and high wind, were reported in North and South Dakota. A severe storm was reported in the Gulf of California and in Lower California; this storm lasted several days and was very destructive.

8th.—A heavy storm prevailed over upper Michigan and the north part of lower Michigan. At Marquette, Mich., a violent thunderstorm occurred in the evening; the wind reached a velocity of 46 miles per hour, causing damage to trees, etc. At Sault de Ste. Marie, Mich., thunderstorms, with heavy rain, occurred at intervals; streets were flooded, trees blown down, and telegraphic communication was interrupted. During a thunderstorm in the early morning at Alpena, Mich., a barn was struck by lightning and burned. In the afternoon a thun-

derstorm, with very heavy rainfall and high wind, caused great damage about Alpena, Mich. A severe wind and rain storm occurred over Chequamegon Bay, Wis., in the afternoon; at Ashland and Washburn, Wis., numerous buildings were badly damaged by high wind.

9th.—Heavy storms occurred in extreme western New York. At Buffalo, N. Y., two dark funnel-shaped clouds appeared in the west-northwest part of the city about 6.53 p. m. and moved rapidly toward the eastern section. At the Weather Bureau Office the wind reached a velocity of 32 miles per hour; the damage caused in the northern part of the city indicated a much greater wind force near the storm-center. At Niagara Falls, N. Y., a church was struck by lightning. Heavy thunder and wind storms caused considerable damage about Toronto, Ont. A very severe storm was reported in lower Michigan. At Posey, Mich., 2 barns were struck by lightning and burned. A heavy hail and thunder storm moved southeast over Bad Axe, Mich., several barns being unroofed by high wind. At Chicago, Ill., a man was killed by lightning and property was damaged by high wind. At Ottawa, Ill., lightning struck in several places. Heavy wind and rain storms in the afternoon caused immense loss in southern Iowa; light buildings were wrecked, others unroofed, and great damage was done to crops and orchards. At Davenport, Iowa, a thunderstorm began at 5 p. m., and rain fell from 7.45 to 8.40 p. m.; the wind reached a velocity of 42 miles per hour, and the temperature fell 14° in 15 minutes.

10th.—During a heavy storm in Marion county, Ind., 2 houses were struck by lightning, and damage was caused by wind. Thunder and wind storms caused considerable damage in western and central Illinois. Severe thunderstorms in central and eastern Michigan seriously damaged trees and houses. Lightning caused some damage in the evening at Dubuque, Iowa. The night of the 10-11th a heavy thunderstorm occurred at Amana, Iowa; lightning struck 3 buildings in the town, and near Amana 3 buildings were struck and some stock killed by lightning. Destructive storms were reported in Lee and De Witt counties, Tex.

11th.—A severe thunder and hail storm caused much damage at Elizabeth, N. J., in the afternoon. During a thunderstorm at Saxon, N. C., a large number of trees were struck by lightning. A heavy thunder, wind, and rain storm caused destruction in Lancaster county, Pa., and at Milton, Pa., 1 person was killed by lightning. A thunderstorm, with very heavy rain, occurred at Gratiot, Ohio, in the morning, and a house near that place was struck by lightning. A severe thunderstorm visited northwestern Illinois and southwest Wisconsin at night. At Saint Louis, Mo., a thunderstorm, with exceptionally heavy rainfall, moved southeast about noon, causing minor damage. Heavy rain fell in eastern Kansas, and at Concordia, Kans., a house was struck by lightning. A heavy hailstorm was reported in Carlton county, Minn. An unusually severe thunder and rain storm was reported at Eureka Springs, Ark. A severe thunderstorm occurred at and about San Bernardino, Cal., where a barn was struck by lightning and burned. At Riverside, Cal., telegraph instruments were burned out. Very heavy rain fell in the mountains east of Redlands, Cal., and a considerable extent of country was flooded, causing much damage to orchards, etc.

12th.—A heavy rain and thunder storm occurred near Eastport, Me., in the early morning. Thunderstorms, with hail and high wind, occurred in Connecticut in the afternoon. At New Haven, Conn., the wind reached a velocity of 40 miles per hour, and the temperature fell 18° in 13 minutes. Considerable damage was done by wind and lightning on Long Island. On Long Island Sound an excursion barge was unroofed and 13 persons were killed and many injured. Violent local storms occurred in New Jersey in the afternoon; several houses were struck by lightning, and damage was caused by high wind. At Philadelphia, Pa., the wind reached a velocity of 28 miles per hour; the temperature fell 19° in 1 hour, and 1 person was killed by lightning. In Maryland considerable

damage was done to crops by hail, and at Towson, Md., a man was reported killed by lightning. At Baltimore, Md., a thunderstorm occurred about noon, during which the temperature fell 20°, and the wind reached 36 miles per hour; a second storm, without thunder and lightning, occurred in the evening, and damage was caused by heavy rain. Heavy thunder and rain storms caused damage in West Virginia. An exceptionally severe thunderstorm passed over Willacoochee, Ga., at night; a building was struck by lightning. Near University, Miss., heavy rain injured crops. A hailstorm caused considerable damage to crops near Mesquite, Tex. Heavy rainfall caused destructive floods at Campo, San Diego county, Cal.

13th.—In Screven county, Ga., a building was struck by lightning, killing one person and seriously injuring 2 others. Heavy storms occurred in west-central Illinois; buildings, crops, etc., were badly damaged. At Meredosia, Ill., a storm, with heavy hail, thunder, and lightning, moved southeast in a path about 1½ mile in width at 6 p. m., damaging crops to the value of several thousand dollars. At Keokuk, Iowa, a thunderstorm, with a light fall of hail, began about 5 p. m. Damage was caused by hail in O'Brien and Osceola counties, Iowa; the wind reached a velocity of 30 miles per hour, causing damage to buildings, trees, etc. At Hay Springs, Nebr., a hailstorm did much damage in a path about 2 miles in width and 10 miles in length. Heavy thunder and hail storms were reported in Minnesota. At Ellsworth, Minn., a storm, with light rain and heavy hail, thunder, and lightning, moved southeast in a path about 40 rods in width, destroying buildings to the value of about \$15,000. At Lake Benton, Minn., hail caused great damage to crops, etc. Great damage was done to corn and other crops near Weston, Wis., by a heavy hailstorm. Heavy rain occurred near Calabasas, Ariz.

14th.—A destructive storm was reported in Wood county, W. Va., at night. A heavy hailstorm was reported in Auglaize county, Ohio. A hailstorm was reported in Steuben county, Ind. Heavy wind, hail, and thunder storms were reported in central Illinois. At Vandalia, Ill., a man and 2 horses were killed by lightning. Heavy wind and rain at night caused damage at Mound City, Mo. A severe wind, hail, and thunder storm occurred at Chillicothe, Mo., in the afternoon. Damage was also done by hail at Glasgow and Rockport, Mo. High wind uprooted trees and damaged crops at Langdon, Mo., and a heavy rain, thunder, and wind storm damaged fruit, crops, etc., near Oregon, Mo. Severe storms were reported in northwest Iowa and South Dakota. At Hastings, Nebr., a storm moved southeast, with rain, hail, and heavy thunder and lightning; the storm extended over a considerable area and was destructive to trees, etc. A heavy windstorm occurred at Fairbury, Nebr., about midnight, and at Jansen, 7 miles east of that place, a number of buildings were blown down.

15th.—A heavy thunder and rain storm occurred at Killingly, Conn., where several buildings were struck and some stock killed by lightning. During a heavy thunder and rain storm at Albany, N. Y., in the afternoon, a house was struck by lightning. During a heavy thunder, rain, and hail storm at Norfolk, Va., in the afternoon, a building was struck by lightning and burned; the fire extended to adjoining warehouses, resulting in an extensive conflagration. Heavy thunder and hail storms occurred in other parts of south Virginia. A windstorm caused considerable damage near Charlotte, N. C., and a heavy thunder and rain storm occurred at Beaufort, S. C. At Elderville, Ill., a thunderstorm, with heavy rain and hail, moved southeast in a path about 2½ miles in width, damaging grain. A thunder and wind storm swept over Bartholomew county, Ind., in the morning. At Elizabethtown, Ind., a storm revolving from right to left moved south of east in a path about 60 yards in width at 3.30 a. m.; heavy rain fell before, and small hail and excessive thunder and lightning attended the storm; estimated damage to buildings \$3,500. At Fulda, Minn., a thunderstorm, with high wind, heavy rain, and hail, moved southward in a path about 2½

miles in width at 4.20 p. m.; a man and a horse were killed by lightning. At Ada, Minn., a heavy thunder and hail storm, with light rain, moved southeast in a path about a mile in width at 3 p. m. A heavy thunder and rain storm occurred at Kansas City, Mo., in the early morning, and at Independence, Mo., 3 houses were struck by lightning. At Kearney, Nebr., a rainstorm, with thunder and lightning, moved northeast at 1 a. m.; a man was killed by lightning, and buildings were damaged to the extent of about \$4,000. In the evening a severe hailstorm occurred at Camp Poplar River, Mont.

16th.—A heavy thunder, wind, and rain storm visited Knox county, Ind., in the evening; buildings were struck and stock killed by lightning, and damage was done to corn and fruit. Severe storms were reported in Illinois, Missouri, and Iowa. At Galveston, Tex., 2 buildings were struck by lightning. At Denver, Colo., a man was killed, 3 others injured, and minor damage caused during a thunderstorm in the evening.

17th.—During a heavy rain and thunder storm at Nashville, Tenn., in the afternoon the temperature fell 10° in 4 minutes and 20° in 1 hour. Destructive thunder, wind, and rain storms occurred in Illinois and western Kentucky. A destructive storm was reported in Jackson county, Mich., in the evening. Damage was caused by a hailstorm in Otter Tail county, Minn. Heavy thunderstorms occurred over west Missouri and east Kansas. A heavy storm was reported in the mountains east of San Bernardino, Cal.; in the valley above Redlands, Cal., the storm was reported as having been very severe, and was attended by thunder and lightning. In Death Valley, Cal., a heavy rainstorm occurred in the morning, and a thunder and rain storm in the evening.

18th.—Great damage was done in Fayette and Hancock counties, Ill., by a severe wind and thunder storm. At Sioux City, Iowa, a man was killed by lightning, and lightning struck at points in Missouri and Iowa.

19th.—A heavy thunder and rain storm occurred at Indianapolis, Ind., in the evening; parts of the city were flooded; a boy was reported drowned, and 3 men were stunned by lightning. A thunderstorm, with heavy rain, occurred at Central City, Ky. Severe storms were reported in Michigan. At Moorhead, Minn., 2 men were killed by lightning. Great destruction by hail was reported near Sanborn, N. Dak. At Chattanooga, Tenn., lightning killed a man, and interrupted traffic on the electric railway.

20th.—An unusually severe thunder and rain storm occurred at Tampa, Fla., in the afternoon. Severe thunder, wind, and rain storms occurred in Indiana and Illinois. Severe thunder and hail storms were reported in central and eastern Minnesota. Damage was caused by lightning in South Dakota. Exceptionally heavy rainfall was reported in Montgomery county, Tenn., in the morning.

21st.—Severe thunderstorms occurred at Raleigh, N. C., and Augusta, Ga., where damage was done to electric wires.

Heavy thunder, hail, and wind storms occurred in west Missouri and east Kansas, destroying crops, damaging buildings, etc. At Kansas City, Mo., a thunderstorm, moving southeast, with heavy rain, high wind, and hail, occurred in the afternoon; the wind reached 48 miles per hour, and the hailstones were about the size of cherries; frail buildings, fences, etc., were blown down, and other minor damage done. At Hansford, Tex., a storm moved southeast in a path 150 to 200 yards in width at 4.30 p. m., its rate of advance being estimated at 75 to 80 miles per hour; no thunder and lightning were observed. During the afternoon a thunderstorm was seen gathering in the west; it divided, a part going north and the other south. The storm cloud was a dingy gray color and did not touch the ground. Small buildings were overturned and larger ones moved; hail fell heavily; damage to buildings estimated at \$700. A severe storm also visited Farwell, Tex., 7 miles north of Hansford.

22d.—Heavy rain and high wind occurred at Savannah, Ga., in the evening. An exceptionally heavy rainstorm occurred at Central City, Ky., in the morning, and at Lillington, N. C., at night. A violent thunderstorm moved northeastward over Vevay, Ind., in the morning; streets and cellars were flooded by heavy rain. During a thunderstorm at night at Galveston, Tex., a boat was capsized in the bay and 3 persons were drowned. A severe storm moved southeast over Brookston, Tex., at night.

23d.—Very heavy thunder and rain storms occurred in eastern Pennsylvania and New Jersey; a number of buildings were struck by lightning, and damage was caused by flood and high wind.

24th.—During a heavy thunderstorm in the afternoon at New Brunswick, N. J., several buildings were struck by lightning. A thunderstorm, with violent wind, damaged grain near Allison, Kans.

25th.—Heavy rain commenced at Milledgeville, Ga., causing destructive floods.

27th.—Excessively heavy rainfall caused floods in eastern New York. Western Massachusetts and parts of Vermont were visited by destructive storms.

28th.—A severe storm swept through the lower part of Newark, N. J., in the afternoon, in a path about 50 yards in width, unroofing buildings, blowing down trees, etc. The storm cloud had the appearance of a large, whirling, black ball. A heavy rainstorm in the afternoon at Anderson, S. C., damaged crops.

29th.—Thunder and hail storms were reported in east and northeast Iowa and northern Missouri.

30th.—Exceptionally heavy rain occurred in the morning at Key West, Fla., 0.60 inch being recorded in 10 minutes. A severe northeast gale prevailed along the New Jersey coast, causing some damage to seaside property. During a thunderstorm at Manton, Mich., some damage was caused by hail.

INLAND NAVIGATION.

FLOODS.

On the 2d a large area of country along the Arkansas River below Little Rock, Ark., was reported under water, and farms, railway tracks, etc., along the Yalobusha River, Mississippi, were inundated. On the 17th destructive floods occurred along the Platte River in south-central Nebraska. On the 21st heavy damage was caused in Macon county, Mo., by the overflow of the Chariton and Muscle Fork rivers. Heavy rain caused floods in the Schuylkill River about Reading, Pa., on the 23d and 24th. On the 26th great damage was caused to railways and crops by the overflow of streams in Baldwin county, Ga. On the 27th streams in east-central New York overflowed their banks, submerging a considerable extent of country and

washing away bridges and dams. On the 28th the Savannah River reached 26 feet at Augusta, Ga., and washouts were reported on railroads in that region. In North Carolina the Roanoke River was high, and on the 27th fields were submerged about Weldon, N. C.

LOW WATER.

At Dubuque, Iowa, the stage of water in the Mississippi River the latter part of the month was the lowest ever noted for August, and navigation was rendered difficult.

STAGE OF WATER IN RIVERS.

In the following table are shown the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence, and the monthly ranges:

Heights of rivers above low-water mark, August, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Red River.</i>						
Shreveport, La.	29.9	16	11.0	1	3.5	7.7
<i>Arkansas River.</i>						
Fort Smith, Ark.	22.0	2	15.0	31	2.9	12.1
Little Rock, Ark.	23.0	2, 3	19.1	29	4.1	15.0
<i>Missouri River.</i>						
Fort Buford, N. Dak.		1	11.7	31	7.4	4.3
Sioux City, Iowa.	18.7	1	11.6	31	7.3	4.1
Omaha, Nebr.	18.0	1	11.2	31	8.2	3.0
Kansas City, Mo.	21.6	3	15.3	31	9.5	5.8
<i>Mississippi River.</i>						
Saint Paul, Minn.	14.0	1, 3, 6, 7, 8	2.0	29	1.2	0.8
La Crosse, Wis.	13.0	1, 2, 3	2.4	8-31	2.0	0.4
Dubuque, Iowa.	16.0	1-4	2.2	26	1.5	0.7
Davenport, Iowa.	15.0	1, 2	1.3	25-29, 31	0.5	0.8
Keokuk, Iowa.	14.0	16	2.8	30	0.3	2.5
Saint Louis, Mo.	30.0	22	19.8	31	10.4	9.4
Cairo, Ill.	40.0	24, 25	19.6	18	12.2	7.4
Memphis, Tenn.	33.0	27	14.2	20	8.9	5.3
Vicksburg, Miss.	41.0	11-14	21.1	25	12.8	8.3
New Orleans, La.	13.0	16	6.2	6	4.3	1.9

Heights of rivers—Continued.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
<i>Ohio River.</i>						
Parkersburg, W. Va.	38.0	26	12.3	17	4.4	7.9
Cincinnati, Ohio	45.0	31	20.1	19	5.1	12.1
Louisville, Ky.	24.0	31	8.7	25	4.9	3.8
<i>Cumberland River.</i>						
Nashville, Tenn.	40.0	6	8.4	17	1.7	6.7
<i>Tennessee River.</i>						
Chattanooga, Tenn.	33.0	4	16.4	19, 20	3.0	13.4
Knoxville, Tenn.	29.0	3	6.2	16, 17, 18	1.4	4.8
<i>Monongahela River.</i>						
Pittsburg, Pa.	29.0	26	9.8	10	2.7	7.1
<i>Savannah River.</i>						
Augusta, Ga.	32.0	28	26.0	18	6.5	19.5
<i>Willamette River.</i>						
Portland, Oregon.	15.0	1-6	6.7	28, 29	3.3	3.4
<i>Susquehanna River.</i>						
Harrisburg, Pa.	17.0	26	6.7	23	2.0	4.7
<i>Alabama River.</i>						
Montgomery, Ala.	48.0	4	15.6	31	1.3	14.3

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroral displays were reported in the northern tier of states from New England to Washington, and southward over New Jersey, Pennsylvania, the Ohio and upper Mississippi valleys, Wyoming, and Utah the night of the 28-29th. At Ithaca, N. Y., the display began 8.30 p. m. and continued until after midnight. It began with a segment of diffused light on the northern horizon and increased in extent and brilliancy until 11.30 p. m., when it extended from azimuth 140° to 230° and to altitude 25° to 30°. From 11.30 p. m. to midnight the western half of the display showed considerable activity, with streamers and huge waves of light rushing upwards. The color of the western part of the arch was a delicate purple, and that of the eastern part a pale green. At Buffalo, N. Y., the aurora was observed as a diffused, wavy light extending about 40° along the northern horizon at 8.55 p. m. It increased in brilliancy until 10.45 p. m., and ended 11.54 p. m. At Detroit, Mich., an aurora of a pale yellow color, with numerous streamers, was observed in the north at 10.30 p. m. It extended over about 90° of azimuth and to altitude about 50°. The display was less brilliant at midnight, and disappeared during the night. At Alpena, Mich., an aurora, consisting of an arch of white light extending from the western to the northern horizon and to altitude about 25°, and a dark segment of altitude about 10°, was observed at 9.40 p. m., and continued until 11.45 p. m. White beams of light about 5° in width shot upward from the arch, and darker beams, having a motion from west to east and thence rapidly back to west, rose from the dark segment. At Sault de Ste. Marie, Mich., three brilliant arches of bluish gray light extending from northwest to northeast were observed at 8.15 p. m. The upper arch extended to altitude about 80°, and numerous streamers shot upwards from the lower arch. At 9.10 p. m. the entire western horizon was covered by what appeared to be a swaying, fiery-red curtain. The display disappeared at 11.50 p. m.

At Marquette, Mich., a well-defined aurora, consisting of a bright white light having the form of a folded curtain resting on a bank of cirro-stratus clouds and extending from azimuth about 135° to 225° and to altitude 45°, was observed from 10 to 11.45 p. m. The display had a west to east motion, first appearing in the northwest, disappearing for a few moments, then reappearing in the northeast. At Grand Haven, Mich., an aurora consisting of a bank of light clouds, extending from northwest to north-northeast, with streamers of a pale yellow color, was observed at 11 p. m. At Rapid City, S. Dak., an aurora appeared as a diffused light at 9.30 p. m. It developed into an arch extending from azimuth about 125° to 224° and to alti-

tude about 40°, over a hazy segment, with streamers to altitude about 45°. The display continued until midnight, and was very brilliant at 11.15 p. m. At Bismarek, N. Dak., an aurora, consisting of a pale diffused light and extending from azimuth 170° to 230° and to altitude 15°, began at 8.30 p. m., and ended during the night. The display was very brilliant about 11 p. m., and bright streamers with a movement from west to east were observed. At Grafton, N. Dak., an aurora, consisting of an arch of brilliant light about 15° in height with streamers along its entire length, appeared in the evening. Above the arch a faint flash of light extended upward to 35°. At 10.30 p. m. three-fourths of the heavens were overspread with swiftly changing sheets of light flashing upward to the zenith. At 1 a. m., 29th, a band of light 30° in width extended from the east to the zenith and thence in an irregular line to the northwest. At Custer Station, Mont., a brilliant aurora, consisting of short pale columns which changed into two arches with columns of light shooting upwards, and "merry dancers," appeared at 8.30 p. m. A third arch, which lasted about 30 minutes, was formed above the second one. The lower arches faded away at 11.30 p. m.

Auroras were reported as follows: 2d, Eastport, Me. 3d, Eastport, Me.; Sault de Ste. Marie and Rockland, Mich.; Mount Washington, N. H.; Medford, Wis. 4th, Sault de Ste. Marie, Mich. 9th, Eastport, Me.; Sault de Ste. Marie, Mich. 10th, Glendive, Mont. 12th, Sault de Ste. Marie, Mich.; Peshtigo, Wis. 13th, East Machias, Me.; Sault de Ste. Marie, Mich. 19th, Groveton, N. H. 21st, Choteau, Mont. 22d, Ottawa, Ill.; Choteau, Mont.; Salem Corners, Pa. 26th, Salem Corners, Pa. 27th, Barren Creek Springs, Md.; Glendive, Mont.; Salem Corners, Pa. 28th, Hartford, Conn.; Era and Payette, Idaho; Riley, Ill.; Alta, Iowa; Concord, Williamstown, and Royalston, Mass.; Lansing, Detroit, Alpena, Grand Haven, Marquette, and Sault de Ste. Marie, Mich.; Custer Station and Glendive, Mont.; Nashua, N. H.; Beverly, N. J.; Buffalo, Ithaca, Oswego, Rochester, Constableville, and Turin, N. Y.; Bismarek, Grand Forks, Grafton, and Napoleon, N. Dak.; Garrettsville and Wauseon, Ohio; Salem Corners, Grampian Hills, and Dyberry, Pa.; Castlewood, Gary, Spearfish, Wolsey, and Rapid City, S. Dak.; Fort Du Chesne, Utah; East Sound, Wash.; Harvey, Wis.; and Sundance, Wyo. 29th, Bancroft, Fayette, Fontanelle, Alta, Maquoketa, Osage, and Stilson, Iowa; Thornville, Mich.; Fort Assiniboine and Custer Station, Mont.; North Loup, Nebr.; Grand Rapids, Bismarek, and Fort Buford, N. Dak.; Providence, R. I.; Howard, Gary, Parkston, and Mitchell, S. Dak.; Prairie Du Chien, Shell Lake, Madison, and Harvey, Wis. 30th, Sandwich, Ill.; Alta and Stilson, Iowa; Fort Buford, N. Dak.; Huron, S. Dak.;

Menomonie, Medford, Osceola Mills, and Hayward, Wis. 31st, Alta and Stilson, Iowa; Sault de Ste. Marie, Mich.; North Loup, Nebr.; Huron, S. Dak.; Ellsworth and Shell Lake, Wis.

THUNDERSTORMS.

The more severe thunderstorms reported for the month are referred to under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains thunderstorms were reported in the greatest number of states, 34, on the 11th; in 33 on the 18th; in 31 on the 12th; in 20 to 30 on the 1st, 2d, 3d, 6th, 8th, 9th, 10th, 13th, 14th, 15th, 17th, 19th, 20th, 21st, 24th, 27th, and 28th; in 10 to 19 on the 4th, 7th, 22d, 23d, 25th, and 26th; in 8 on the 30th; and in 7 on the 31st.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 30, in Florida; on 26 to 29 in Georgia, Illinois, Iowa, Kansas, Louisiana, Mississippi, Mis-

souri, Nebraska, North Carolina, South Carolina, South Dakota, Texas, and Wisconsin; on 10 to 19 in Alabama, Arkansas, Connecticut, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Tennessee, Vermont, and Virginia; and on 1 to 9 in Delaware, District of Columbia, Montana, New Hampshire, Oklahoma Territory, Rhode Island, and West Virginia. West of the Rocky Mountains thunderstorms were reported as follows: Arizona, 1st to 12th, 14th to 18th, and 25th to 30th; California, 10th, 11th, 15th, 16th, 17th, 25th to 28th; Colorado, 1st to 9th, 11th to 22d, and 24th to 31st; Nevada, 26th; New Mexico, 1st, 2d, 4th, 6th, 8th, 9th, 10th, 12th, 17th, 18th, 25th to 31st; Oregon, 3d, 4th, 5th, 11th, and 29th; Utah, 1st, 2d, 4th, 5th, 6th, 9th to 20th, 26th, 27th, 28th, and 30th; Washington, 5th, 6th, 11th, 12th, 13th, 15th, 17th, and 24th; Wyoming, 1st to 8th, 11th, 13th, 19th, 21st, 25th, and 30th. In Idaho and Indian Territory no thunderstorms were reported.

MISCELLANEOUS PHENOMENA.

DROUGHT.

In southeast Massachusetts drought seriously affected crops, and many wells were dry. Fruit was injured about Mico, Fla., and cotton was reported damaged about Livingston, Ala. Crops suffered about Fayette, Miss., and Lead Hill, Ark. Drought and cold weather the latter part of the month injured cotton in parts of Louisiana. The month was unusually dry and vegetation was damaged by drought in Brazos county, Tex., Socorro county, N. Mex., Cochise county, Ariz., northwest and east Kansas, and central and northwest Wisconsin. In Polk county, Wis., lakes and ponds were reported lower than ever before observed, and low water in the upper Wis-

consin river prevented milling and logging operations. On the 1st rain broke a drought that had been very destructive to stock and vegetation along the Rio Grande River, Texas, from Presidio to Cameron counties. In the early part of the month crops were badly damaged in southeast Illinois, in Miami and Pulaski counties, Ind., in Fond du Lac county, Wis., and in western Michigan. In parts of Rhode Island and Connecticut mills were stopped on account of insufficient water.

FOREST FIRES.

Forest fires were reported near Cheboygan, Mich., on the 8th; near Manistee, Mich., on the 11th; in Cumberland county, Nova Scotia, on the 14th; and in Nevada county, California, on the 18th.

VERIFICATIONS.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Room.]

FORECASTS FOR 24 HOURS IN ADVANCE.

The forecasts for districts east of the Rocky Mountains for August, 1891, were made by 1st Lieutenant W. A. Glassford, Signal Corps, and those for the Pacific coast districts were made at San Francisco, Cal., by 1st Lieutenant John P. Finley, 15th Infantry.

Percentages of forecasts verified, August, 1891.

State.	Weather.	Temperature.	Weather and temperature combined.	State.	Weather.	Temperature.	Weather and temperature combined.
Maine.....	84.2	65.2	76.6	Arkansas.....	86.8	87.1	86.9
New Hampshire.....	83.5	67.7	77.2	Tennessee.....	88.4	89.4	88.8
Vermont.....	80.6	65.2	74.4	Kentucky.....	88.1	91.3	89.4
Massachusetts.....	82.3	68.4	76.7	Ohio.....	81.9	79.7	81.0
Rhode Island.....	82.3	84.8	83.3	West Virginia.....	77.7	78.4	78.0
Connecticut.....	80.6	77.7	79.4	Indiana.....	88.1	78.1	84.1
Eastern New York.....	85.8	74.2	81.2	Illinois.....	79.4	73.5	77.0
Western New York.....	87.7	80.6	84.9	Lower Michigan.....	80.3	74.5	78.0
Eastern Pennsylvania.....	81.0	64.2	74.3	Upper Michigan.....	81.6	68.7	76.4
Western Pennsylvania.....	81.6	81.9	81.7	Wisconsin.....	82.9	73.5	80.1
New Jersey.....	84.2	74.5	80.3	Minnesota.....	88.7	81.3	85.7
Delaware.....	83.2	72.3	78.8	Iowa.....	83.2	80.6	82.2
Maryland.....	83.9	75.3	79.8	Kansas.....	90.0	73.2	83.3
District of Columbia.....	73.5	71.9	72.9	Nebraska.....	84.5	75.2	80.8
Virginia.....	80.3	73.5	77.6	Missouri.....	89.7	82.6	86.9
North Carolina.....	78.7	74.2	76.9	Colorado.....	93.2	71.0	84.3
South Carolina.....	77.1	82.6	79.3	North Dakota.....	89.0	73.9	83.0
Georgia.....	85.2	88.7	86.6	South Dakota.....	82.3	76.1	79.8
Eastern Florida.....	87.1	92.3	89.2	Northern California.....	95.8	82.3	90.4
Western Florida.....	80.3	90.3	84.3	Southern California.....	97.1	86.8	93.0
Alabama.....	91.9	85.5	89.3	Oregon.....	95.2	83.2	90.4
Mississippi.....	90.6	89.4	90.1	Washington.....	93.2	89.4	91.7
Louisiana.....	92.6	95.8	93.9				
Texas.....	90.3	96.1	92.6	Monthly percentage.....	84.4	78.7	82.1

In determining the monthly percentage of weather and temperature combined, the

Pacific coast states are not included. The forecasts of temperature in districts east of the Rocky Mountains for August, 1891, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day. The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10.

FORECASTS FOR 48 AND 72 HOURS IN ADVANCE.

Appreciating the great importance that long time predictions possess for the general public the Chief of the Weather Bureau has authorized forecasts for 48 and 72 hours, covering the 2d and 3d days in advance. These are optional with the forecast official, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 589; temperature, 392. Percentages of verifications: weather, 76.8; temperature, 79.6; weather and temperature combined, 77.7.

Percentages of verifications of forecasts made for third day in advance. Number of predictions made: weather, 30; temperature, 29. Percentages of verifications: weather, 83.7; temperature, 81.0; weather and temperature combined, 82.6.

WIND SIGNALS FOR AUGUST, 1891.

Statement showing percentages of justifications of wind signals for the month of August, 1891.

Wind signals.—(Ordered by Lieut. W. A. Glassford.)—Total number of signals ordered, 14; justified as to velocity, 9; justified as to direction, 12. All of the signals ordered were cautionary; 5 signals were ordered for easterly winds, and 9 were ordered for westerly winds. Percentage of justifications, 41.0. Number of winds without signals, 12. Number of signals ordered late, 8.

No cold-wave signals were ordered, and no temperature-fall warnings were issued during the month.

STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts and summaries are republished from reports for August, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—Maximum, 102, at Wiggins, 19th; minimum, 44, at Valley Head, 25th; greatest monthly range, 49, at Valley Head and Pine Apple; least monthly range, 30, at Chepultepec.

Precipitation.—Greatest monthly, 8.03, at Eufaula; least monthly, 0.21, at Bermuda.

Wind.—Prevailing direction, northwest.—*P. H. Mell, Observer, Weather Bureau, Auburn, director.*

ARKANSAS.

The month was remarkable for extremely low temperature.

Temperature.—The mean was 1.9 below the normal; maximum, 108, at Reesces Ferry, 17th; minimum, 39, at Rogers, 24th; greatest monthly range, 60, at Reesces Ferry; least monthly range, 25, at Winslow.

Precipitation.—The average was about normal; greatest monthly, 5.80, at Dallas; least monthly, 0.25, at Pine Bluff.

Wind.—Prevailing direction, southwest.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Observer, Weather Bureau, assistant.*

COLORADO.

Temperature.—The month was slightly warmer than usual along the Arkansas Valley, and about the average in other sections; maximum, 103, at Cheyenne Wells; minimum, 25, at Platoro, 31st.

Precipitation.—About one-half the usual amount of rain fell in the upper Arkansas and San Luis valleys, and west of the mountains, except in the extreme northwest; in all other sections the precipitation equaled or exceeded the average; greatest monthly, 5.77, at Jefferson; least monthly, 0.04, at Arboles.

Wind.—Prevailing directions, southeast to east over west and northeast parts of the state; elsewhere it was from northwest to southwest.—*W. S. Miller, Observer, Weather Bureau, Denver, director.*

ILLINOIS.

Temperature.—The mean was 1.5 below the normal; maximum, 103, at Centralia, 10th; minimum, 40, at Hennepin and Philo, 28th.

Precipitation.—The average was 1.56 above the normal; greatest monthly, 8.51, at McLeansborough; least monthly, 1.24, at Winnebago.

Wind.—Prevailing direction, northwest.—*John Craig, Observer, Weather Bureau, Springfield, director.*

INDIANA.

Temperature.—Maximum, 99, at Maury, 10th; minimum, 41, at Logansport, 25th and 28th; greatest monthly range, 56, at Maury; least monthly range, 34, at Butlerville.

Precipitation.—Greatest monthly, 11.45, at Worthington; least monthly, 2.70, at Princeton.

Wind.—Prevailing direction, southwest.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Observer, Weather Bureau, assistant.*

IOWA WEATHER AND CROP SERVICE.

Temperature.—The mean was slightly below the normal; maximum, 106, at Glenwood, 7th, and at Blakeville, 9th; minimum, 37, at Atlantic, 24th and 28th; greatest monthly range, 64, at Glenwood; least monthly range, 42, at Independence.

Precipitation.—The average was slightly above the normal; greatest monthly, 13.02, at Maxon; least monthly, 1.23, at Mason City.

Wind.—Prevailing direction, south.—*J. R. Sage, Des Moines, director; G. M. Chappel, Observer, Weather Bureau, assistant.*

KANSAS.

Temperature.—Maximum, 110, at Collyer, 9th; minimum, 36, at Lebo and Atwood, 24th; greatest monthly range, 67, at Eureka Ranch; least monthly range, 42, at La Crosse.

Precipitation.—Greatest monthly, 5.03, at Morse; least monthly, trace, at Grenola.

Wind.—Prevailing direction, south.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Observer, Weather Bureau, assistant.*

KENTUCKY.

Temperature.—The mean was about 2.0 below the normal; maximum, 98, at Shelbyville, 10th, and at Princeton, 14th; minimum, 43, at Springfield, 29th; greatest monthly range, 54, at Shelbyville; least monthly range, 38, at Middlesborough.

Precipitation.—The average was about 2.00 above the normal; greatest monthly, 9.23, at Earlington; least monthly, 2.72, at Shelbyville.

Wind.—Prevailing direction, south.—*Prof. E. H. Mark, Louisville, director; Frank Burke, Observer, Weather Bureau, assistant.*

LOUISIANA.

The cold wave of the 23d injured cotton and cane.

Temperature.—The temperature was above the normal; maximum, 102, at

Liberty Hill, 20th; minimum, 45, at Winnsborough, 23d, at Cameron, 30th, and at Davis, 24th; greatest monthly range, 54, at Winnsborough, Liberty Hill, Coushatta, and Cameron; least monthly range, 22, at Port Eads.

Precipitation.—The average was below the normal; greatest monthly, 5.34, at Port Eads; least monthly, 0.20, at Delhi.—*George E. Hunt, Observer, Weather Bureau, New Orleans, director.*

MARYLAND.

Temperature.—Maximum, 98, at Kirkwood, Del., 10th, 22d, and 23d; minimum, 37, at Mount Saint Marys, 29th; greatest monthly range, 56, at Mount Saint Marys; least monthly range, 18, at Summit Hall.

Precipitation.—Greatest monthly, 6.17, at Barren Creek Springs; least monthly, 3.00, at Summit Hall.

Wind.—Prevailing direction, northwest.—*Dr. William B. Clark, Johns Hopkins University, Baltimore, director; Prof. Milton Whitney, Maryland Agricultural College, secretary and treasurer; C. P. Cronk, Observer, Weather Bureau, in charge.*

MICHIGAN.

Temperature.—The mean was 0.7 above the normal; maximum, 103, at Ivan, 8th; minimum, 31, at Grayling and Hillman, 29th.

Precipitation.—The average was 0.81 above the normal; greatest monthly, 9.47, at Hayes; least monthly, 0.90, at Atlantic.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Observer, Weather Bureau, Detroit, director.*

MINNESOTA.

Temperature.—In the northwestern part of the state the mean was above the normal, while in the northeastern and southern parts it was below; maximum, 98, at Crookston, 5th, at Montevideo, 7th, and at Minneapolis and Kinbrae, 8th; minimum, 32, at Morris, 23d; greatest monthly range, 64, at Crookston and Montevideo; least monthly range, 41, at Duluth and Pine River Dam.

Precipitation.—The average was below the normal; greatest monthly, 5.23, at Crookston; least monthly, 0.69, at Montevideo.

Wind.—Prevailing direction, northwest.—*J. H. Harmon, Observer, Weather Bureau, Minneapolis, director.*

MISSISSIPPI.

Temperature.—The mean was about 2.0 below the normal; maximum, 106, at Columbus, 20th; minimum, 42, at Aberdeen, 29th, and at Port Gibson, 24th; greatest monthly range, 57, at Louisville; least monthly range, 32, at Ship Island.

Precipitation.—The average was 2.28 below the normal; greatest monthly, 6.25, at Logtown; least monthly, 0.14, at Lake.

Wind.—Prevailing direction, southwest.—*R. B. Fulton, Observer, Weather Bureau, University, director.*

MISSOURI.

Temperature.—The mean was above the normal; maximum, 1.08, at Protem, 17th; minimum, 38, at Platte City, 24th.

Precipitation.—The average was 2.07 above the normal; greatest monthly, 13.10, at Steelville; least monthly, 2.37, at Protem.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McRae, Observer, Weather Bureau, assistant.*

NEBRASKA.

The month was one of low temperature, and there was more than the usual amount of rainfall.

Temperature.—Maximum, 106, at Superior and Long Pine; minimum, 30, at Long Pine.

Precipitation.—Greatest monthly, 6.18, at Ravenna; least monthly, 0.96, at De Soto.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Observer, Weather Bureau, assistant.*

NEVADA.

Temperature.—The mean was slightly below the normal; maximum, 101, at Sodaville, 23d, and at Belleville, 27th; minimum, 25, at Sunnyside, 8th; greatest monthly range, 73, at Sunnyside; least monthly range, 27, at Virginia City.

Precipitation.—The average was 0.60 below the normal; greatest monthly, 3.31, at Palmetto; least monthly, 0.00, at Palisade, Humboldt, Hot Springs, and Genoa.

Wind.—Prevailing direction, south.—*Prof. Charles W. Friend, Carson City, director; F. A. Carpenter, Observer, Weather Bureau, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 0.5 above the normal; maximum, 97, at Farmington, 10th, and at Lake Cochituate, Westborough, and North Grosvenor Dale, 11th; minimum, 33, at Berlin Mills, 20th; greatest monthly range, 59, at Farmington; least monthly range, 29, at Nantucket.

Precipitation.—The average was 0.42 below the normal; greatest monthly, 6.54, at Providence (c); least monthly, 1.15, at Portland.

Wind.—Prevailing direction, southwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Observer, Weather Bureau, assistant.*

NEW JERSEY.

Temperature.—The mean was 1.8 below the normal; maximum, 100, at Tenafly and Somerville, 11th; minimum, 46, at Gillette, Dover, and Hanover, 1st; greatest monthly range, 53, at Somerville; least monthly range, 31, at Atlantic City.

Precipitation.—The average was 0.60 above the normal; greatest monthly, 8.89, at Locktown; least monthly, 2.58, at Lancewood.

Wind.—Prevailing direction, southwest.—*R. W. McGann, Observer, Weather Bureau, New Brunswick, director.*

NEW MEXICO.

Temperature.—Maximum, 100, at Albert, 19th; minimum, 34, at Monero, 31st; greatest monthly range, 53, at Estalina Springs; least monthly range, 37, at Gallinas Spring.

Precipitation.—Greatest monthly, 1.99, at Nogal; least monthly, 0.40, at Taos.—*H. B. Hersey, Observer, Weather Bureau, Santa Fe, director.*

NEW YORK.

Temperature.—The mean was 0.1 below the normal; maximum, 97, at Poughkeepsie, 11th; minimum, 37, at Arcade, 29th; greatest monthly range, 56, at Palermo; least monthly range, 30, at White Plains.

Precipitation.—The average was 0.60 above the normal; greatest monthly, 10.52, at Schodack Depot; least monthly, 1.91, at White Plains.

Wind.—Prevailing direction, southwest.—*Prof. E. A. Fuytes, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Hardinge, Observer, Weather Bureau, assistant.*

NORTH CAROLINA.

The early part of the month was warm and favorable for the growth of crops, but the latter part was too cool, with very heavy rains, causing the condition of crops, especially cotton, to deteriorate rapidly.

Temperature.—The mean was 0.7 below the normal; maximum, 97, at Chapel Hill, 9th, at Douglas and Southern Pines, 10th, and at Morganton, 11th; minimum, 45, at Franklin, 24th; greatest monthly range, 47, at Franklin; least monthly range, 18, at Hatteras and Kitty Hawk.

Precipitation.—The average was 1.91 above the normal; greatest monthly, 16.30, at Smithfield; least monthly, 2.80, at Franklin.

Wind.—Prevailing directions, south and southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Observer, Weather Bureau, assistant.*

NORTH DAKOTA.

Temperature.—The mean was about normal; maximum, 102, at Grand Rapids, 7th; minimum, 23, at Grand Rapids, 23d; greatest monthly range, 79, at Grand Rapids; least monthly range, 59, at Bismarck.

Precipitation.—The average was about 0.50 below the normal; greatest monthly, 2.96, at Fargo; least monthly, 0.14, at Power.

Wind.—Prevailing direction, northwest.—*W. H. Fallon, Observer, Weather Bureau, Bismarck, director.*

OHIO.

Temperature.—In the northern part of the state the month was 1.0 warmer than usual; elsewhere the mean temperature was normal; maximum, 101, at Bangorville, 10th; minimum, 39, at Wauseon, 29th.

Precipitation.—The average was 0.27 below the normal; greatest monthly, 5.62, at Georgetown; least monthly, 0.60, at Bellevue.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Observer, Weather Bureau, secretary and assistant.*

OREGON.

The month was marked by continued excessively high temperature, especially from the 21st to the 29th, and by unusually heavy rainfall (for the season) the early part of the month.

Temperature.—The mean was 3.2 above the normal; maximum, 107, at Pendleton, 29th; minimum, 33, at Lakeview, 5th and 6th.

Precipitation.—The average was 0.26 above the normal; greatest monthly, 1.87, at Bandon; least monthly, 0.00, at Hardman, Pendleton, and New Bridge.

Wind.—Prevailing direction, north.—*Hon. H. E. Hayes, Master State Grange, Portland, director; B. S. Pague, Observer, Weather Bureau, asst.*

PENNSYLVANIA.

Temperature.—The mean was about 0.7 below the normal; maximum, 99, at Charlesville, 9th, and at Philadelphia (voluntary observer), 10th; greatest monthly range, 59, at Charlesville; least monthly range, 29, at Kennett Square.

Precipitation.—The average was about 0.75 above the normal; greatest monthly, 9.47, at Girardville; least monthly, 1.43, at New Castle.

Wind.—Prevailing direction, southwest.—*Under direction of the Franklin Institute, Philadelphia; L. M. Dey, Observer, Weather Bureau, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 98, at Greenwood, 9th; minimum, 55, at Florence and Greenwood; greatest monthly range, 43, at Greenwood; least monthly range, 27, at Port Royal.

Precipitation.—Greatest monthly, 14.75, at Port Royal; least monthly, 4.30, at Chester.

Wind.—Prevailing direction, southwest.—*A. P. Butler, Observer, Weather Bureau, Columbia, director.*

SOUTH DAKOTA.

Temperature.—The mean was about 1.0 above the normal; maximum, 112, at Forest City, 7th; minimum, 25, at Castlewood, 23d; greatest monthly range, 75, at Aberdeen; least monthly range, 52, at Millbank.

Precipitation.—The average was 0.23 below the normal; greatest monthly, 5.89, at Tyndall; least monthly, 0.20, at De Smet.

Wind.—Prevailing direction, southeast.—*S. W. Glenn, Observer, Weather Bureau, Huron, director.*

TENNESSEE.

The excessive rains in the eastern part of the state had a damaging effect on tobacco and peaches, and in the western part a deficiency occurred and crops generally suffered.

Temperature.—The mean was 0.5 below the normal; maximum, 99, at Union City, 17th; minimum, 44, at Hohenwald, 29th.

Precipitation.—The average was 0.31 above the normal; greatest monthly, 10.38, at Clarksville.

Wind.—Prevailing direction, southwest.—*J. D. Plunket, M. D., Nashville, director; J. B. Marbury, Observer, Weather Bureau, assistant.*

TEXAS.

Temperature.—The mean was 1.0 to 2.0 over east Texas and the Panhandle; it was about 1.0 in the extreme west part; elsewhere it was about normal; maximum, 109, at Graham, 21st; minimum, 48, at Hartley and Hansford, 23d, and at Longview, 24th.

Precipitation.—The average was in excess in the northwestern part and on the middle coast; elsewhere it was below the normal; greatest monthly, 6.31, at Corpus Christi; least monthly, 0.02, at Rio Grande City.—*D. D. Bryan, Galveston, director; I. M. Cline, Observer, Weather Bureau, assistant.*

VIRGINIA.

Temperature.—Maximum, 103, at Richmond, 9th; minimum, 48, at Big Stone Gap, 24th; greatest monthly range, 50, at Richmond; least monthly range, 30, at Wytheville.

Precipitation.—Greatest monthly, 7.15, at Birdsnest; least monthly, 2.77, at Cape Charles.—*Dr. E. A. Craighill, Lynchburgh, director; J. N. Ryker, Observer, Weather Bureau, assistant.*

WASHINGTON.

The most marked characteristics were the high temperature and the excess in rainfall.

Temperature.—Maximum, 105, at Walla Walla, 29th; minimum, 36, at Waterville, 6th; greatest monthly range, 50, at Waterville; least monthly range, 28, at Fort Canby and Doe Bay.

Precipitation.—Greatest monthly, 3.26, at Doe Bay; least monthly, 0.14, at Fort Simcoe.

Wind.—Prevailing direction, northwest.—*E. B. Olney, Observer, Weather Bureau, Olympia, director.*

WISCONSIN.

Temperature.—The mean was 2 to 6 below the normal, except in the eastern part of the state; maximum, 104, at Elroy, 8th; minimum, 27, at Hayward, 28th.

Precipitation.—The average was below the normal, except in the northeastern part of the state, where there was an excess of 2.00 to 3.50; greatest monthly, 6.96, at Crandon; least monthly, 0.71, at Westfield.—*W. L. Moore, Observer, Weather Bureau, Milwaukee, director.*

CONTRIBUTIONS AND ORIGINAL ARTICLES.

FLUCTUATIONS OF TEMPERATURE AT THE BASE AND SUMMIT OF MOUNT WASHINGTON.

[By Prof. H. A. HAZEN, Weather Bureau.]

At the end of the charts in this REVIEW will be found a continuation of the curves which were published in July. These curves are for the months of January, February, and March of the years 1875, 1876, 1877, and 1878. A critical discussion of these curves is deferred until all are completed, but it is of interest to note one or two facts which are prominent.

1st. The fluctuations of temperature are almost identical at the base and summit.

2d. The summit curve has a marked tendency to reach its maximum and minimum points 8 to 16 hours earlier than that at the base.

3d. The temperature reaches its lowest point on the passage of a high area at the base. This is shown by the fluctuations of pressure in the dotted line.

4th. The temperature reaches its highest point on the passage of a low area or a storm at the base.

It frequently happens that a minimum of the temperature curve at the summit almost coincides with the minimum pressure at the base, and it might be thought that sometimes these two phases are coincident, but it will be seen at once that in no case is this true, but the slight advance of the temperature fluctuation at the summit causes this apparent coincidence.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, August, 1891.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean.			Max.	Min.	Mean.	
Alabama.					Arkansas—Cont'd.				
Bermuda *†	94	55	79.4	0.21	Conway	93	55	75.0	1.63
Bessomer	98	50	78.0	2.43	Dallas	98	47	74.7	5.80
Brewton†	101	54	81.4	1.73	Dardanelle	97	49	77.6	2.10
Carrollton	98	55	77.4	0.74	Deval Bluff	97	49	77.6	2.10
Chilpersburg	98	56	78.2	1.23	El Dorado	93	49	72.7	4.75
Chilpersburg	98	56	78.2	1.23	Fayetteville*	95	49	72.3	1.18
Chilpersburg	98	56	78.2	1.23	Forrest City†	95	49	77.4	3.69
Chilpersburg	98	56	78.2	1.23	Pulaski	95	49	77.4	3.69
Chilpersburg	98	56	78.2	1.23	Gaines Landing†	96	50	76.4	4.05
Chilpersburg	98	56	78.2	1.23	Harrisburg	96	50	76.4	4.05
Chilpersburg	98	56	78.2	1.23	Helena (1)	96	50	76.4	4.05
Chilpersburg	98	56	78.2	1.23	Helena (2)	100	50	77.8	3.10
Chilpersburg	98	56	78.2	1.23	Hot Springs	100	43	76.0	3.09
Chilpersburg	98	56	78.2	1.23	Lead Hill*	108	45	77.7	2.37
Chilpersburg	98	56	78.2	1.23	Lonoke	99	51	79.2	2.69
Chilpersburg	98	56	78.2	1.23	Madding	96	50	78.2	3.90
Chilpersburg	98	56	78.2	1.23	Malvern	96	50	78.2	3.90
Chilpersburg	98	56	78.2	1.23	Monticello	97	51	80.4	4.44
Chilpersburg	98	56	78.2	1.23	Mount Nebo	89	49	73.7	1.59
Chilpersburg	98	56	78.2	1.23	New Gascony	99	49	73.7	1.59
Chilpersburg	98	56	78.2	1.23	Newport (1)†	100	50	78.0	3.68
Chilpersburg	98	56	78.2	1.23	Newport (2)	100	50	78.0	3.68
Chilpersburg	98	56	78.2	1.23	Ozark	95	49	74.7	3.90
Chilpersburg	98	56	78.2	1.23	Ozark	95	49	74.7	3.90
Chilpersburg	98	56	78.2	1.23	Paragould	96	50	78.2	3.90
Chilpersburg	98	56	78.2	1.23	Pine Bluff	98	54	78.8	0.35
Chilpersburg	98	56	78.2	1.23	Prescott	94	54	77.4	3.98
Chilpersburg	98	56	78.2	1.23	Rogers†	95	49	73.5	3.04
Chilpersburg	98	56	78.2	1.23	Russellville	97	46	77.1	0.73
Chilpersburg	98	56	78.2	1.23	Stuttgart	95	47	73.8	3.10
Chilpersburg	98	56	78.2	1.23	Texarkana	98	50	79.2	3.73
Chilpersburg	98	56	78.2	1.23	Winlow	92	57	72.6	1.90
Chilpersburg	98	56	78.2	1.23	California.				
Chilpersburg	98	56	78.2	1.23	Alcalde	113	60	90.1	0.00
Chilpersburg	98	56	78.2	1.23	Alcatraz Island	75	45	55.7	0.00
Chilpersburg	98	56	78.2	1.23	Almaden	103	55	71.0	0.00
Chilpersburg	98	56	78.2	1.23	Anaheim*	99	64	77.4	0.00
Chilpersburg	98	56	78.2	1.23	Angel Island	89	48	63.2	0.00
Chilpersburg	98	56	78.2	1.23	Antioch*	104	60	76.1	0.00
Chilpersburg	98	56	78.2	1.23	Aptos*	88	48	68.6	0.00
Chilpersburg	98	56	78.2	1.23	Athlone*	115	61	84.6	0.00
Chilpersburg	98	56	78.2	1.23	Auburn	105	56	79.6	0.00
Chilpersburg	98	56	78.2	1.23	Bakersfield*	109	74	89.2	0.00
Chilpersburg	98	56	78.2	1.23	Ballast Point L. H.	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Barstow	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Belmont*	104	59	79.1	0.00
Chilpersburg	98	56	78.2	1.23	Benicia Barracks	108	52	72.5	0.00
Chilpersburg	98	56	78.2	1.23	Berondo*	114	62	83.9	0.00
Chilpersburg	98	56	78.2	1.23	Berkeley	93	51	69.9	0.00
Chilpersburg	98	56	78.2	1.23	Bishop Creek	103	66	84.1	0.03
Chilpersburg	98	56	78.2	1.23	Boca	95	66	83.7	0.00
Chilpersburg	98	56	78.2	1.23	Borden	114	66	85.3	0.00
Chilpersburg	98	56	78.2	1.23	Boulder Creek	108	42	61.9	0.00
Chilpersburg	98	56	78.2	1.23	Brentwood	105	62	80.7	0.00
Chilpersburg	98	56	78.2	1.23	Brighton*	111	68	84.8	0.00
Chilpersburg	98	56	78.2	1.23	Calliente	106	60	87.0	0.00
Chilpersburg	98	56	78.2	1.23	Callistoga	106	56	72.8	0.00
Chilpersburg	98	56	78.2	1.23	Campo	94	58	74.8	0.00
Chilpersburg	98	56	78.2	1.23	C. Mendocino L. H.	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Castroville*	80	54	64.7	0.00
Chilpersburg	98	56	78.2	1.23	Centerville*	110	61	71.1	0.00
Chilpersburg	98	56	78.2	1.23	Chico	116	65	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Colfax*	105	58	82.7	0.00
Chilpersburg	98	56	78.2	1.23	Colton*	105	60	79.9	0.00
Chilpersburg	98	56	78.2	1.23	Corning	112	65	84.4	0.00
Chilpersburg	98	56	78.2	1.23	Crescent City	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Crescent City L. H.	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Delano*	113	65	87.4	0.00
Chilpersburg	98	56	78.2	1.23	Delta*	109	59	81.5	0.00
Chilpersburg	98	56	78.2	1.23	Dunnigan	104	64	84.3	0.00
Chilpersburg	98	56	78.2	1.23	Dunsmuir	104	52	73.9	0.07
Chilpersburg	98	56	78.2	1.23	East Brother L. H.	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Edgewood	97	48	70.3	0.05
Chilpersburg	98	56	78.2	1.23	El Dorado	108	62	80.6	0.00
Chilpersburg	98	56	78.2	1.23	Elmira	110	62	79.1	0.00
Chilpersburg	98	56	78.2	1.23	El Verano*	104	58	73.1	0.00
Chilpersburg	98	56	78.2	1.23	Emigrant Gap*	92	50	69.3	0.00
Chilpersburg	98	56	78.2	1.23	Esparto*	105	62	80.6	0.00
Chilpersburg	98	56	78.2	1.23	Evergreen	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Farmington*	113	62	81.4	0.00
Chilpersburg	98	56	78.2	1.23	Felton*	110	56	70.5	0.00
Chilpersburg	98	56	78.2	1.23	Fernando*	104	58	77.2	0.00
Chilpersburg	98	56	78.2	1.23	Florence*	93	63	74.7	0.00
Chilpersburg	98	56	78.2	1.23	Folsom	110	63	83.1	0.00
Chilpersburg	98	56	78.2	1.23	Fort Bidwell	95	58	69.4	0.19
Chilpersburg	98	56	78.2	1.23	Fort Gaston	109	45	72.4	0.00
Chilpersburg	98	56	78.2	1.23	Fort Mason	88	44	60.4	0.00
Chilpersburg	98	56	78.2	1.23	Fresno	112	67	85.8	0.00
Chilpersburg	98	56	78.2	1.23	Fruto	110	68	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Galt	108	70	84.7	0.00
Chilpersburg	98	56	78.2	1.23	Georgetown†	100	50	76.4	0.00
Chilpersburg	98	56	78.2	1.23	Gilroy	108	52	71.6	0.00
Chilpersburg	98	56	78.2	1.23	Girard*	105	58	82.0	0.00
Chilpersburg	98	56	78.2	1.23	Goshen*	113	50	80.1	0.00
Chilpersburg	98	56	78.2	1.23	Grass Valley	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Haywards*	96	54	67.1	0.00
Chilpersburg	98	56	78.2	1.23	Hollister*	106	45	69.9	0.00
Chilpersburg	98	56	78.2	1.23	Hornbrook*	104	54	77.8	0.00
Chilpersburg	98	56	78.2	1.23	Humboldt L. H.	108	59	85.6	0.00
Chilpersburg	98	56	78.2	1.23	Hydesville	87	44	61.5	0.00
Chilpersburg	98	56	78.2	1.23	Ione	108	61	80.2	0.00
Chilpersburg	98	56	78.2	1.23	Iowa Hill*	95	59	77.5	0.00
Chilpersburg	98	56	78.2	1.23	Julian	93	37	74.7	0.59

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean.			Max.	Min.	Mean.	
California—Cont'd.	°	°	°	<i>Ins.</i>	California—Cont'd.	°	°	°	<i>Ins.</i>
Keeler	103	68	84.2	0.02	Sequel	84	48	66.9	0.00
Keene*	102	57	75.7	0.00	S. E. Farrallon L. H.	84	48	66.9	0.00
Kingsburgh*	107	65	83.1	0.00	South Vallejo*	89	50	65.4	0.00
King City*	112	45	71.7	0.00	Spadra*	102	62	76.9	0.00
Knight's Landings*	110	60	79.1	0.00	Steeles*	102	62	67.6	0.00
Lathrop*	108	60	80.9	0.00	Summit	84	50	69.8	0.00
Laurel*	105	51	69.4	0.00	Suisun City*	105	57	71.9	0.00
Lemoore*	112	63	83.2	0.00	Susana†	93	45	71.0	T.
Lime Point L. H.	110	60	80.0	0.00	Tehama	110	63	84.5	0.00
Livingston	114	62	87.5	0.00	Templeton*	99	52	74.4	0.00
Los Angeles*	95	62	76.4	0.00	Towles*	95	60	74.7	0.00
Los Banos	106	70	84.3	0.00	Tracy*	103	70	80.0	0.00
Los Gatos (1)*	104	49	69.2	0.00	Traver	108	62	80.8	0.00
Los Gatos (2)	101	47	69.2	0.00	Trinidad L. H.	110	63	84.5	0.12
Mammoth Tank	116	85	93.1	1.65	Tropico	98	52	75.1	0.00
Mare Island L. H.	100	65	87.5	0.00	Truckee (1)	92	57	75.1	0.00
Martinez*	94	52	66.5	0.00	Tulare*	116	62	80.4	0.00
Marysville (1)	100	65	87.5	0.00	Turlock*	110	65	82.6	0.00
Marysville (2)	104	60	80.1	0.00	Upper Lake	107	48	74.0	0.00
Menlo Park*	104	53	68.2	0.00	Upper Mattole	108	59	69.2	T.
Merced	114	54	84.0	0.00	Vacaville (1)	108	63	79.4	T.
Milton (near)	105	60	80.2	0.00	Vacaville (2)*	110	60	76.5	0.00
Modesto*	110	63	81.5	0.00	Valley Springs*	103	65	80.4	0.00
Mohave*	111	71	89.4	0.00	Vina*	109	68	83.7	0.00
Monson*	110	64	87.2	0.00	Volcano Springs*	129	75	99.4	0.33
Montague*	105	60	80.9	0.00	Volta*	114	67	84.8	0.00
Monterey*	96	50	62.2	0.00	Walla Walla Creek	96	43	70.4	0.40
Monterey (Hotel del Monte)	90	52	63.4	0.00	Walnut Creek	110	54	75.2	0.00
Napa City*	106	50	68.9	0.00	Westley*	109	75	85.6	0.00
National City	98	57	74.0	0.03	Wheatland	107	55	79.2	0.00
Needles*	120	68	95.2	0.52	Whittier	98	65	79.2	0.00
Newhall*	109	60	80.2	0.00	Willow (1)	108	53	79.0	0.00
Newman*	111	76	90.3	0.00	Willow (2)	112	65	80.4	0.00
Siles*	97	56	72.0	0.00	Winters*	112	68	83.7	0.00
Northfork	106	44	73.6	0.00	Woodland	104	60	77.0	0.00
Norwalk	104	54	75.8	0.00	Yerba Buena L. H.	102	33	65.6	0.00
Oakland (1)	99	48	63.0	0.00	Colorado.				
Oakland (2)*	80	54	62.6	0.00	Abbott†	104	48	68.1	1.04
Ogilby	118	73	99.6	0.46	Agate*	100	42	66.1	1.82
Orangeville†	108	54	79.9	0.00	Akron*	74	29	51.2	1.68
Orland*	116	68	89.4	0.00	Alma†	93	49	66.3	2.50
Oroville	109	60	79.0	0.00	Amherst†	88	30	68.5	1.83
Pajaro*	92	45	63.8	0.00	Antonia	82	60	73.4	0.10
Palermo	106	54	81.0	0.00	Apishapa*	93	49	66.3	0.04
Petaluma	104	55	68.4	0.08	Arboles†	93	49	66.3	2.05
Piedras Blancas L.H.	100	65	87.5	0.00	Aroya	100	55	68.1	0.42
Pigeon Point L. H.	100	65	87.5	0.00	Aspen*	93	29	61.1	2.45
Placerville (1)*	105	59	77.6	0.00	Bennet*	100	55	68.1	1.85
Placerville (2)	102	44	72.2	0.00	Box Elder†	100	55	68.1	2.13
Pleasanton	107	63	79.2	0.00	Brush†	100	55	68.1	1.03
Pt. Ano Nuevo L.H.	104	63	84.0	0.00	Burlington†	96	51	71.1	1.67
Point Arena L. H.	100	65	87.5	0.00	Byers*	98	42	76.1	0.82
Point Bonita L. H.	110	64	87.2	0.00	Canon City†	95	39	66.9	1.29
Pt. Conception L.H.	110	64	87.2	0.00	Castle Rock†	103	52	75.1	2.35
Pt. Fermin L. H.	110	64	87.2	0.00	Cheyenne Wells	65	31	49.8	2.60
Pt. Hueneeme L. H.	100	65	87.5	0.00	Climax*	90	44	65.6	1.59
Point Montara L. H.	100	65	87.5	0.00	Colorado Springs†	74	32	53.2	2.52
Point Pinos L. H.	100	65	87.5	0.00	Como (near)	99	42	72.4	2.98
Point Reyes L. H.	100	65	87.5	0.00	Cook	78	30	53.0	0.53
Point Sur L. H.	100	65	87.5	0.00	Cumbres	87	30	54.2	0.47
Pomona*	102	62	77.8	0.00	Del Norte	100	55	68.1	2.20
Porterville*	112	68	86.9	0.00	Downing	100	55	68.1	1.20
Presidio of San F.	91	48	59.6	0.20	Dumont†	100	55	68.1	1.97
Puente*	102	93	76.7	0.00	East Dale	93	49	70.6	2.06
Ravenna*	108	64	81.0	0.00	First View*	93	49	70.6	0.91
Red Bluff	111	60	84.9	0.00	Fort Collins	93	37	66.3	1.00
Redding*	114	63	81.94	0.00	Fort Collins (near)	83	28	62.9	1.61
Riverside (1)	104	52	77.8	0.05	Fort Lewis	94	45	67.8	1.33
Riverside (2)	104	53	78.8	0.00	Fort Logan	98	44	73.1	0.59
Roe Island L. H.	100	65	87.5	0.00	Fruita	100	55	68.1	1.96
Rocklin*	110	60	83.3	0.00	Garnett	100	55	68.1	1.67
Rumsey*	111	78	90.2	0.00	Gaynor†	84	37	62.4	0.66
Sacramento (1)	95	45	69.0	0.00	Georgetown	81	43	63.6	2.23
Sacramento (2)*	90	64	75.4	0.00	Glen Erie†	101	42	68.4	1.91
Sacramento (3)	95	60	76.1	0.00	Grover	94	40	70.0	1.73
Salinas (1)	99	53	60.43	0.00	Hugo*	95	36	66.2	5.77
Salinas (2)*	90	54	67.1	0.00	Husted†	89	36	61.3	3.29
Salton*	116	80	96.1	0.00	Idaho Springs	70	31	42.4	0.81
Sanger Junction	113	63	85.7	0.00	Jefferson	101	45	74.8	1.34
San Diego B'ks	89	62	73.8	0.00	Kit Carson*	98	55	76.6	1.19
San Gabriel*	105	64	77.7	0.00	Lamar	101	45	74.8	1.75
San Jose*	101	55	69.4	0.00	La Porte	100	55	68.1	1.49
San Luis L. H.	100	65	87.5	0.00	Las Animas†	98	44	73.2	2.89
San Mateo*	98	56	68.4	0.00	Lavender	100	55	68.1	1.54
San Pedro*	95	63	76.8	0.00	Le Roy*	93	43	68.3	1.54
Santa Ana*	100	59	78.4	0.00	Leslie	86	38	63.2	1.58
Santa Barbara (1)	88	55	69.1	0.00	Livermore	93	39	66.0	2.06
Santa Barbara L. H.	100	65	87.5	0.00	Longmont	100	48	67.2	1.19
Santa Clara	100	65	87.5	0.00	Magnolia†	96	38	68.6	1.66
Santa Cruz (1)*	99	50	72.0	0.00	Manhattan†	90	50	73.6	0.74
Santa Cruz (2)*	100	46	66.2	0.00	Meeker	96	38	68.6	1.10
Santa Cruz L. H.	100	65	87.5	0.00	Middle Box Elder	85	33	62.3	0.41
Santa Margarita	99	47	69.0	0.00	Monte Vista (1)	80	33	59.2	0.73
Santa Maria	100	65	87.5	0.00	Montrose (near)	80	33	59.2	0.99
Santa Monica*	86	56	72.1	0.00	Pagoda (near)*	91	35	65.1	1.30
Santa Paula*	90	59	70.4	0.00	Pagosa Springs	57	40	60.4	0.95
Santa Rosa	102	45	68.1	0.00	Parachute†	92	50	73.6	0.04
Selma*	111	61	82.9	1.02	Paradox	107	65	81.2	0.74
Seven Palms*	122	80	92.1	1.02	Platara	72	25	52.8	3.45
Shingle Springs*	107	65	81.2	0.00	Red Cliff	100	48	70.3	1.55
Sims*	104	47	73.2	0.00	Rico*	106	54	68.7	2.19
Sisson	100	48	70.3	0.00	River Bond*	92	54	72.7	0.00
Soledad	106	54	68.7	0.00					
Sonoma	104	49	70.0	0.00					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
Colorado—Cont'd.					Georgia—Cont'd.				
Bobb's.....	98	41	70.4	0.60	Waynesborough.....	98	60	80.2	11.35
Rocky Ford.....	100	45	73.6	0.78	West Point.....	94	62	81.8	4.07
Saint Cloud.....				1.55	Idaho.				
San Asencia.....				0.39	American Falls.....	98	39	69.2	0.00
Sanborn.....				2.52	Boise Barracks.....	102	46	73.2	0.00
San Luis.....	92	34	64.3	0.48	Era.....	90	32	65.4	0.00
Sedgwick.....	97	50	72.4	3.06	Fort Sherman.....	88	45	68.0	0.83
Sheridan Lake.....	89	34	63.3	2.43	Henry's Lake.....	93	42	65.9	0.15
Smoky Hill Mine.....				2.58	Kootenai.....	93	42	65.9	0.15
Springfield.....				0.53	Mullan.....	93	44	60.9	1.57
Stamford.....				0.39	Payette.....	108	42	74.0	0.00
Surface Creek.....	98	46	71.0	2.70	Illinois.				
Table Rock.....				0.74	Alton.....				4.40
T. S. Ranch.....	91	52	65.7	2.13	Aurora (1).....	99	42	67.6	5.01
Thon.....	100	37	69.9	1.24	Aurora (2).....				5.16
Twin Lakes.....				1.27	Beardstown.....				4.44
Vilas.....				1.32	Beason.....	93	44	69.1	6.06
Villa Grove.....				2.17	Carlville.....	93	54	74.7	5.34
Ward District.....				1.80	Centralia.....	103	56	73.0	7.56
Watkins.....	82	46	67.2	0.62	Chester.....				4.16
Windsor.....				2.44	Collinsville.....	97	48	73.0	2.87
Yuma.....				0.75	Cockrell.....	101	52	71.0	2.70
Connecticut.					East Peoria.....	96	56	72.9	8.47
Canton.....	94	51	71.0	4.86	Flora.....	97	45	72.5	3.18
Colchester.....	92	45	70.3		Fort Sheridan.....	102	44	68.2	3.75
Falls Village.....				3.37	Golconda.....	92	54	74.4	6.33
Fort Trumbull.....	97	50	73.3		Greenville.....	100	45	71.6	4.37
Hamford (2).....				3.92	Griggsville.....	95	49	70.0	1.75
Lebanon.....				4.11	Hennepin.....	101	40	70.1	4.45
Mansfield.....	91	46	68.4	3.95	Irishtown.....				2.37
Middletown.....	92	48	70.0	3.52	Jerseyville.....	97	52	75.3	2.75
New Hartford (1).....	91	46	66.9	5.44	Jordana Grove.....	95	49	72.7	3.43
New Hartford (2).....				5.44	Lacon.....	97	52	70.8	6.09
Newington.....				4.01	Lanark.....	94	48	71.7	2.63
N. Grosvenor Dale.....	95	51	73.4	4.03	Louisville.....	96	48	71.6	6.10
North Woodstock.....				5.05	Martinsville.....	90	50	74.9	6.55
Southampton.....	89	47	70.2	2.93	Mascoutah.....	99	54	74.4	7.40
South Manchester.....				4.80	Mattoon.....	98	52	72.1	4.95
Stevenson.....				2.73	McLeansborough.....	102	48	74.3	8.51
Thompson.....	89	48	68.2		Mount Carmel.....				7.42
Voluntown.....	93	50	69.7	5.08	New Haven.....	95	54	73.9	4.41
Wallingford.....				3.01	Olney (1).....	98	54	71.7	3.96
Waterbury.....	97	45	71.2	3.04	Olney (2).....	98	54	71.7	3.96
West Simsbury.....				4.92	Oswego.....	96	48	67.9	4.36
Delaware.					Ottawa.....	98	47	69.2	5.11
Dover.....	92	56	73.1	4.03	Palestine.....	96	46	69.6	6.30
Kirkwood.....	98	60	74.8		Pana.....	94	55	73.1	6.50
District of Columbia.					Peoria (1).....				5.92
Dist'ng Reservoir.....	91	58	74.2	5.23	Peoria (2).....	99	50	72.2	5.71
Long Bridge.....				4.77	Philo.....	96	40	71.5	4.21
Ree'ng Reservoir.....	88	60	74.2	3.67	Pontiac.....	102	48	73.0	3.95
Washington B'ks.....	94	55	76.4	4.72	Riley.....	95	42	67.8	1.95
West Washington.....	101	54	76.0	5.35	Rockford.....	99	44	68.4	1.44
Florida.					Rock Island Arsenal.....	93	43	68.4	1.44
Alva.....	98	69	80.2	9.90	Rushville.....	98	48	70.1	7.94
Amelia.....				6.38	Sandwich.....	95	44	69.0	3.87
De Land (1).....	99	69	82.8	6.30	Sycamore.....	96	46	68.3	2.22
De Land (2).....	94	70	81.2		Warsaw.....				2.76
Eustis.....	98	71	81.7	4.28	White Hall.....	92	44	73.3	2.54
Fort Barrancas.....	101	56	82.8	0.93	Winnebago.....	95	41	68.8	1.24
Gainesville.....	99	60	80.9	0.27	Indiana.				
Hypoxia.....	94	74	82.6	6.88	Angola.....	97	45	71.7	3.80
Merritts Island.....	94	74	83.4	3.65	Butlerville.....	91	57	71.7	5.58
Miami.....	94	70	81.4	4.87	Columbia City.....	95	43	71.6	3.01
Orange City.....	94	70	81.4	4.87	Columbus.....	92	52	70.8	8.66
St. Francis B'ks.....	96	71	81.2	3.65	Connorsville.....	93	43	70.2	2.79
St. Petersburg.....	94	72	82.1	13.32	De Gonia Springs.....	91	49	72.2	5.23
Tallahassee.....	92	65	78.6	7.28	Delphi.....	93	44	67.5	3.47
Tarpon Springs.....	93	70	81.6	6.89	Evansville.....				8.26
Georgia.					Farmland.....	96	50	71.5	3.26
Albany.....	97	63	81.5	4.00	Huntington.....				3.58
Allapaha.....	95	62	80.3	7.43	Jeffersonville.....	92	49	72.5	4.55
Americus.....	104	60	82.4	6.83	La Fayette.....	97	46	69.0	4.86
Athens (1).....	93	59	76.3	3.64	Logansport (1).....				3.18
Athens (2).....	94	59	77.1	4.42	Logansport (2).....	95	41	70.8	2.85
Bainbridge.....	96	64	81.2	3.86	Marengo.....	92	49	73.3	8.33
Blakely.....	94	68	81.2	7.05	Marion.....	96	42	69.0	4.92
Camak.....	94	50	78.4	8.41	Mauzy.....	99	43	71.0	3.15
Cartersville.....	96	52	78.4	1.72	Michigan City.....	91	48	68.6	
Columbus.....	91	63	77.2	6.19	Mount Vernon (1).....				5.09
Cordele.....	100	58	80.8	8.72	Mount Vernon (2).....	94	49	73.2	5.09
Eastman.....	98	58	80.0	3.59	Muncie.....	96	57	73.1	5.38
Elberton.....	92	59	77.4	5.64	Point Isabel.....	98	47	71.2	5.01
Forsyth.....	94	64	78.7	8.05	Princeton.....	96	47	72.5	2.70
Fort Gaines.....	94	54	75.8	5.08	Rockville.....	98	45	72.1	4.15
Gillville.....	89	61	77.0	3.11	Rushville.....				3.21
Griffin.....	94	58	78.4	3.40	Seymour.....	93	49	72.3	6.73
Hephzibah.....	89	64	76.8	2.71	Shelbyville.....	92	55	75.6	3.63
Macon.....	96	56	78.0	10.10	Terre Haute.....				6.69
Marietta.....	91	63	73.6	1.94	Yevay.....	94	50	72.2	6.52
Milledgeville.....	93	62	78.4	9.46	Vincennes.....				6.77
Millen.....	98	58	80.4	7.89	Worthington.....	90	51	70.4	11.45
Monticello.....				7.57	Indian Territory.				
Newnan.....	92	54	76.4	2.68	Eufaula.....				1.80
Point Peter.....	99	60	76.4	6.20	Fort Supply.....	98	45	76.2	0.90
Poulan.....	99	58	78.4	5.73	Healdton.....	102	54	79.9	0.62
Quitman (2).....	102	66	81.8	8.19	South McAlester.....	100	57	82.5	1.00
Rome.....				4.80	Tulsa.....				0.70
Thomasville (2).....	101	63	81.2	4.04	Woodward.....				0.03
Toccoa.....	92	58	77.4	4.58	Iowa.				
Union Point.....	95	60	78.2	11.81	Alta (1).....	94	40	67.6	5.64
Washington.....	95	60	78.8	12.64	Alta (2).....	91	41	64.9	5.64
Way Cross.....	94	66	80.0	5.45	Amana.....	94	40	68.4	5.20

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Iowa—Cont'd.</i>	°	°	°	<i>Ins.</i>	<i>Kansas—Cont'd.</i>	°	°	°	<i>Ins.</i>
Atlantic.....	97	34	68.1	1.72	Kirwin.....				1.15
Audubon.....				3.60	La Crosse.....	97	55	77.7	1.35
Bancroft.....	93	49	68.1	3.48	La Harpe.....				1.68
Bedford.....				4.73	Larned.....	108	44	70.6	0.62
Belle Plaine.....	94	40	68.7	2.31	Lawrence.....	94	48	72.5	1.18
Blakeville.....	106	44	70.7	6.54	Lebo.....	101	36	74.0	1.07
Bonaparte.....	96	54	75.1	5.13	Macksville.....	106	44	75.7	2.37
Carroll.....	93	36	69.3	5.17	Manhattan (1).....				2.27
Cedar Falls.....	89	38	68.6	3.63	Manhattan (2).....	102	40	73.6	0.98
Cedar Rapids.....	95	41	69.8	5.44	Manhattan (3).....	104	42	75.1	0.97
Charles City.....	90	40	66.9	4.36	Mankato.....	98	42	78.7	1.40
Clarinda.....	93	44	71.4	4.67	McAllister.....	104	50		
Clinton.....	92	42	68.8	3.89	McPherson.....				0.59
College Springs.....	96	49	70.5	5.74	Minneapolis.....	94	40	74.4	0.30
Cordova.....				4.72	Monument.....	104	58		0.50
Corning (1).....				5.66	Morse.....	94	43	71.6	4.73
Corning (2).....	90	46	69.8	7.18	Morton.....	104	46	77.9	1.80
Corydon.....	91	42	69.1	6.23	New Eng'd Ranch.....	105	46	74.7	1.34
Cresco.....	95	38	65.8	2.63	Oakley.....	102	52		
Delaware.....	96	40	65.7	5.66	Oberlin.....				2.46
Denison.....	98	40	70.8	4.74	Ogallah.....	100	65		0.50
Eagle Grove.....	90	44	70.2	3.35	Oswego.....	104	40	78.6	0.95
Fairfield.....	94	45	70.4	8.30	Page City.....	100	53		1.00
Fayette.....	94	34	65.0	4.22	Pauline.....	99	40	75.0	1.74
Fontanelle.....				2.37	Plainville.....	96			
Fort Madison.....	98	50	74.6	5.20	Pleasant Dale.....	97	37	69.7	2.20
Glenwood (1).....	106	42	75.4	2.58	Rome.....	102	49	76.4	0.52
Grand Meadow.....	92	44	65.9	2.52	Salina.....	95	50	76.3	0.71
Greenfield.....	91	38	68.6	1.66	Sedan.....	101	47	77.7	0.69
Grinnell.....	93	40	68.4	5.04	Seneca.....	96	38	70.8	2.37
Grundy Centre.....	93	47	68.3	4.34	Shields.....	103	45	78.7	0.83
Hampton.....	93	38	65.9	3.08	Stafford.....	97	48	72.8	2.95
Hopeville.....	92	41	68.9	3.75	Sterling.....	99	45	76.0	0.75
Hopkinton.....	92	43	70.0	5.83	Ulysses.....				1.23
Humboldt.....				3.89	Wakefield.....	104	48	75.2	0.62
Independence.....	90	48	67.9	4.35	Wa Keeney.....	99	58		0.56
Iowa City.....	95	41	68.4	3.45	Wallace (1).....				0.48
Keosauqua.....	95	46	71.4	5.90	Wallace (2).....	103			
Larabee.....	96	40	66.8	3.85	Weskan (1).....	103	52	78.1	0.80
Le Claire.....				2.76	Weskan (2).....	98	38	72.2	2.72
Logan.....	95	40	72.1	3.31	Winona.....	106	50		
Ludlow.....	96	40	70.4	2.42	Yates Centre.....	104	38	75.5	0.25
Mason City.....	96			1.23	<i>Kentucky.</i>				
Maxon.....	94	48	71.2	13.02	Bowling Green.....	97d	51d	76.9d	6.76
Maquoketa.....	96	47	69.3	4.05	Burkesville.....				4.80
Marshalltown.....	94	38	68.5	3.61	Burnside.....				5.72
McCausland.....	89	46	66.1	4.08	Cattlettsburgh.....				3.71
Monticello.....	93	38	68.1	4.11	Canton.....	97	53	73.4	5.29
Mt. Pleasant* (1).....	92		69.6	6.16	Central City.....	105	42	73.4	19.76
Mount Pleasant (2).....				6.42	Earlington.....	96	54	76.1	9.23
Murray.....	90	41	69.6	2.56	Edmonton.....	89	48	70.9	6.27
Muscataine (2).....	90	44	58.5	5.20	Falmouth.....				3.51
Osage.....	92	42	64.8	2.05	Fort Thomas.....	93	47	71.1	4.04
Oskaloosa.....	93	41	70.0	3.80	Frankfort (1).....				7.97
Panama.....	93	40	69.4	3.90	Frankfort (2).....	95	48	71.4	6.97
Richland.....	93	52	67.4	5.67	Franklin.....	96	57	74.4	6.23
Sac City.....	93	39	65.4	3.50	Greensburgh.....				4.84
Sanborn.....	100	44	67.8	3.58	Harrodsburgh.....	97	44	71.8	7.25
Stilson.....	99	37	70.0	2.25	Louisia.....				3.73
Storm Lake.....	92	40	68.8	3.16	Middlesborough.....	90	52	72.5	3.02
Tipton.....	94	43	66.4	5.98	Newport Barracks.....	93	46	71.4	3.25
Vinton.....	92	42	67.1	3.24	Paducah.....				0.07
Washington.....	96	44	72.9	2.87	Pellville.....	95	44	71.7	5.64
Webster City.....	101	42	67.8	4.37	Princeton.....	98	48	74.0	6.90
Williams.....	96	38	66.3	3.16	Shelbyville.....	98	44	71.5	2.72
Windsor.....				2.12	South Fork.....				71.1
Winterset.....	90	43	70.2	2.15	Springfield.....	94	43	71.2	3.62
<i>Kansas.</i>					<i>Louisiana.</i>				
Abilene.....	100	43	75.4	0.63	Abbeville.....	94	57	80.0	2.30
Allison.....	92	40	71.4	1.66	Alexandria.....	97	48	78.6	2.63
Altona.....	94	36	75.9	0.92	Amité City.....	98	50	79.1	5.16
Bucklin.....				0.95	Baton Rouge.....	96	53	79.5	3.08
Buffalo Park.....	102			1.50	Cameron.....	99	45	78.0	1.73
Burr Oak.....	99	42		2.50	Cheneyville.....	95	50	78.9	2.43
Cawker City.....	100	48	74.4	0.50	Clinton.....	96	52	81.4	1.43
Coldwater.....	98	48	74.8	1.27	Coushatta (1).....				1.38
Collyer.....	110			1.40	Coushatta.....	100	46	80.0	1.38
Columbus.....	104	41	75.6	2.19	Davis.....	97	45	78.0	1.92
Concordia.....	97	40	71.8	0.62	Delhi.....				0.20
Cunningham.....	100	42	75.1	1.22	Edgard.....	93	61	80.2	1.86
Downs.....				2.27	Emilie.....	95	54	78.8	2.52
Dwight.....				1.30	Girard.....				0.92
Elco.....	100	42	75.2	1.35	Homer.....	93	53	77.7	2.91
Elk Falls.....	101	58	79.8	0.76	Houma.....	96	56	79.6	4.64
Ellis.....	102	58		3.00	Jackson Barracks.....	97	56	79.9	3.10
Emporia.....	94	45	76.6	4.47	Jeannerette.....	98	52	80.4	2.75
Englewood.....	98	54	76.1	1.48	Lafayette.....	98	53	79.6	0.29
Eureka Ranch.....	106	39	74.2	1.29	Lake Charles.....	99	50	76.2	3.40
Ft. Leavenworth (1).....	96	44	73.3	7.06	Lawrence.....	93d	63d	81.8d	3.83
Ft. Leavenworth (2).....	98	47	73.8	6.50	Liberty Hill.....	102	48	79.2	2.59
Fort Riley.....	98	40	73.4	0.60	Luling.....	97	52	74.4	3.81
Fort Scott.....	97	44		3.35	Marksville.....	96	54	78.6	2.55
Fremont.....	104	38	73.0	1.14	Maurepas.....	94	51	77.2	1.73
Globe.....	93	46	71.6	1.70	Melville.....	96	54	80.0	3.55
Gove City.....	104	52	76.2	0.39	Minden.....	98	51	79.2	2.54
Grainfield.....	98	48		1.50	Monroe.....	96	54	80.2	4.33
Grénola.....	94	46	77.1	T.	Natchitoches.....	97A	46A	78.0A	2.42
Grinnell.....	100	56		0.30	New Iberia.....	96	55	80.5	1.25
Halstead.....	94	44	73.6	0.56	N. La. Ex. Station.....	97	49	77.7	4.67
Havensville.....	97	41	71.9	0.80	Shell Beach.....	95	60	80.2	2.57
Horton.....	96	44	73.0	2.72	Sugar Ex. Station.....	98	57	80.8	2.05
Hutchinson.....	99	47	76.7	1.47	Winnabourgh.....	99	45	78.0	0.33
Independence.....	105	43	75.4	0.33	<i>Maine.</i>				
Kansas City.....	98	44	73.4	6.50	Bar Harbor.....	86	48	64.6	2.45
Kellogg.....	103	43	77.0	0.58	Bellevast.....	83	34	63.8	3.32

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
Maine—Cont'd.	°	°	°	Ins.	Michigan.	°	°	°	Ins.
Bethel	87	35	55.3	5.33	Adrian	98	39	69.4	4.31
Calais	88	44	65.6	3.45	Albion (1)	94	44	69.1	5.93
Cornish	89	51	69.4	3.70	Allegan	98	44	69.6	3.35
East Machias	88	42	65.0	4.90	Alma	95	35	66.4	4.47
Fairfield	89	41	65.3	4.00	Ann Arbor	94	46	68.6	4.54
Farmington	97	38	67.4	4.03	Arbela	94	39	65.4	5.11
Fort Preble	90	47	68.1	1.30	Atlantic	71	39	55.4	0.90
Kennebec Arsenal	85	50	63.6	0.94	Ball Mountain	95	42	66.2	3.61
Lewiston	86	46	67.4	2.97	Bangor	99	42	69.8	2.72
Mayfield	83	41	63.9	4.78	Bear Lake	93	43	66.3	4.06
Orono	87	43	66.2	4.67	Bellaire	92	37	64.7	2.78
Petit Menan	73	51	60.9	.....	Benton Harbor	100	48	71.1	3.03
West Jonesport	82	52	59.6	.....	Bensonia	94	42	65.4	4.31
					Berlin	99	41	69.3	6.29
Maryland.					Berrien Springs (2)	98	38	66.8	4.47
Barren Creek Sp'gs	90	55	73.7	6.17	Birch Run	98	35	66.8	5.88
Cumberland (1)	90	50	70.5	3.44	Birmingham	96	43	68.4	4.17
Cumberland (2)	95	49	74.8	3.71	Bronson	96	40	65.3	2.44
Port McHenry	93	51	73.8	3.71	Calumet	94	44	61.6	2.98
Frederick	93	54	74.4	3.53	Caldwell	96	38	65.2	3.50
Gaithersburg	90	57	74.9	3.32	Charlevoix	93	48	67.4	3.52
Great Falls	90	57	74.6	3.32	Cheboygan	92	38	62.7	5.28
Jowell	88	59	70.1	6.88	Clinton	96	40	68.9	2.54
Mt. St. Marys Col.	93	37	68.1	4.97	Colon	98	42	66.1	3.15
Taneytown	92	52	72.2	4.25	Concord	98	40	67.8	4.94
Woodstock	92	52	72.2	4.87	Corunna	95	40	65.4	6.03
					Crystal Falls	97	37	62.4	3.32
Massachusetts.					Deerfield	100	44	71.9	1.86
Adams	88	51	67.8	.....	East	95	33	63.4	4.15
Amherst	88	46	68.3	3.67	Fairview	96	44	68.7	3.72
Amherst Ex Sta (1)	90	46	68.3	3.67	Pitchburg	99	38	67.3	5.69
Amherst Ex Sta (2)	92	45	70.3	4.15	Flint	98	38	66.6	3.83
Andover	92	45	70.3	2.99	Fort Brady	90	36	62.2	3.09
Ashland	92	45	70.3	2.99	Fort Mackinac	83	44	61.4	5.16
Blue Hill (sum't)	91	49	68.0	4.72	Fort Wayne	100	41	70.0	2.43
Blue Hill (base)	90	49	69.0	4.66	Fremont	95	41	66.3	2.66
Blue Hill (valley)	92	45	69.0	4.70	Gaylord	90	33	61.4	3.63
Boston	92	45	69.0	4.70	Grape	96	47	69.0	1.39
Cambridge (1)	87	30	69.2	3.74	Grayling	97	31	64.8	3.92
Cambridge (2)	90	33	70.9	3.68	Hanover	95	44	69.3	4.79
Chestnut Hill	90	48	70.2	4.02	Harbor Springs	97	38	64.2	3.84
Chicopee	92	45	70.2	3.96	Harrisville	85	37	63.2	9.24
Clinton	93	50	69.2	2.85	Hart	95	40	67.6	3.70
Concord	93	50	69.2	2.85	Hastings	95	45	68.1	3.17
Cotuit	93	47	70.8	4.13	Hayes	91	43	66.4	9.47
Deerfield	92	47	70.8	4.13	Highland Station	97	40	67.7	1.36
Dudley	94	53	70.4	2.58	Hillman	90	31	60.2	4.44
Egg Rock, Nahant	86	34	66.5	.....	Hilledale	97	45	70.6	3.64
Fall River (1)	92	53	70.6	2.70	Holt	99	38	67.9	6.98
Fiskdale	92	53	70.6	2.70	Howell	99	38	67.9	6.98
Fitchburg (1)	90	54	68.6	2.48	Hudson	94	33	63.2	3.93
Fitchburg (2)	92	49	69.1	2.46	Ivan	103	37	65.6	5.98
Florida (1)	90	49	68.8	3.90	Jackson	96	39	66.8	.....
Florida (2)	86	43	64.3	3.56	Jeddo	96	46	70.0	3.07
Fort Warren	86	51	67.5	4.61	Kalamazoo	97	50	70.6	3.24
Framingham	94	45	69.3	1.65	Lansing	98	43	67.6	5.27
Gilbertville	90	45	69.3	1.65	Lathrop	94	32	63.9	3.42
Groton (1)	91	49	69.6	1.95	Madison	94	42	68.2	8.44
Heath	92	48	67.7	.....	Marshall	100	41	69.1	6.13
Hocanic Tunnel	95	41	69.0	2.47	May	97	42	68.6	1.89
Kendall Green	92	48	70.6	4.23	Montague	97	42	65.6	3.01
Lake Cochituate	97	41	70.8	4.91	Mottville	101	48	70.6	1.36
Lawrence	94	50	71.6	2.01	Noble	88	50	69.4	3.24
Leicester	79	53	66.7	3.36	North Aurelius	95	41	69.3	2.67
Leominster	90	54	71.4	1.95	Olivet	95	41	69.3	2.67
Long Plain	90	54	71.4	1.95	Ovid	99	43	69.1	2.67
Lowell (1)	92	50	70.3	2.14	Parkville	97	41	67.4	5.45
Lowell (2)	92	47	68.9	.....	Paw Paw	100	43	68.8	3.00
Lowell (3)	95	46	71.1	.....	Pontiac	82	48	68.1	2.62
Ludlow (1)	90	41	67.3	3.33	Pulaski	85	50	66.2	4.36
Mansfield	95	56	70.1	3.39	Rawsonville	99	44	70.2	1.80
Medford	92	41	68.3	3.45	Rockland	93	36	63.4	1.85
Middleborough	88	55	67.0	4.31	Saint Ignace	87	42	62.6	4.54
Milton	92	44	69.0	3.27	Saint Beach	94	40	64.7	4.85
Monson	92	44	69.0	3.27	Stanton	96	42	67.0	3.49
Mount Nonotuck	92	44	69.0	3.27	Stockbridge	96	42	67.0	3.49
Mystic Lake	92	44	69.0	3.27	Thornville	96	42	67.0	3.49
Mystic Station	92	44	69.0	3.27	Vandalia	96	42	67.0	3.49
Nahant	86	53	65.7	3.58	Venona	96	42	67.0	3.49
New Bedford (1)	90	52	68.6	2.08	Washington	100	40	67.4	5.00
New Bedford (2)	93	50	70.2	2.17	Weldon Creek	95	40	64.4	8.22
Newburyport (1)	91	49	68.3	2.04	White Pigeon	99	40	68.6	1.50
Newburyport (2)	93	52	72.6	3.81	Williamston	95	44	69.6	5.45
Northampton	93	52	72.6	3.81	Ypsilanti	91	36	64.2	2.60
North Billerica	96	46	71.3	1.90					
Plymouth	91	59	71.5	3.18	Minnesota.				
Princeton	88	46	67.3	1.99	Alexandria	92	38	66.2	3.70
Provincetown	90	53	70.1	3.93	Alma City	92	38	66.2	3.70
Randolph	90	53	70.1	3.93	Crookston	92	38	66.2	3.70
Roberts Dam	90	53	70.1	3.93	Farmington	96	44	67.7	2.11
Royalston	88	54	69.0	2.88	Fergus Falls	96	44	67.7	2.11
Salem (1)	87	39	67.4	2.75	Fort Ripley	96	44	67.7	2.11
Savoy	89	54	74.7	2.12	Fort Snelling	96	44	67.7	2.11
Somerset	87	39	67.4	2.75	Grand Meadow	96	44	67.7	2.11
South Hingham	87	39	67.4	2.75	Kinbrae	96	44	67.7	2.11
Springfield Arm'y	92	50	70.7	4.01	L. Winnibigoshish	86	41	62.0	2.46
Swampscott (2)	93	52	66.7	.....	Leech Lake	87	33	61.7	3.07
Taunton (1)	94	48	69.8	3.99	Le Sueur	95	46	69.0	2.89
Taunton (2)	94	47	70.6	3.97	Minneapolis	96	46	67.4	3.74
Taunton (3)	94	47	70.6	3.97	Montevideo	96	46	67.4	3.74
Wakefield	92	52	72.3	2.51	Morris	93	33	66.8	1.64
Waltham	92	52	72.3	2.51	Northfield	93	33	66.8	1.64
Wellesley	91	44	68.4	3.58	Ortonville	95	44	64.3	3.15
Westborough	97	50	72.8	3.02	Red Wing	94	40	67.2	3.13
Williamstown	93	49	67.6	3.66					
Winchester	93	49	67.6	3.66					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
Minnesota—Cont'd.	°	°	°	Ins.	Montana—Cont'd.	°	°	°	Ins.
Redwood Falls	95	44	64.3	3.42	Glendive	105	39	72.2	0.15
Saint Charles	95	44	64.3	2.30	Martinsdale	92	35	65.2	0.75
Mississippi.					Virginia City	87	39	66.6	0.39
Aberdeen	96	44	74.8	1.46	Nebraska.				
Agricultural College	95	53	78.9	1.30	Ansley	105	38	72.3	1.22
Batesville	100	49	76.9	3.65	Ashland	98	40	70.7	3.08
Booneville	99	50	78.0	1.05	Auburn (1)	97	42	74.9	5.66
Brookhaven	99	47	78.4	2.68	Bassett	98	44	68.8	4.27
Canton	95	53	78.3	1.30	Beatrice	95	41	71.2	2.88
Columbus (1)	107	51	81.4	2.24	Beaver City	102	46	75.8	3.26
Columbus (2)	107	51	81.4	2.24	Brandon	95	48	69.9	2.48
Corinth	95	49	76.0	2.74	Burwell	96	48	69.9	2.48
Edwards	97	51	79.6	2.29	Creighton	95	34	66.8	4.69
Enterprise	97	51	79.6	2.29	Crete	94	39	69.8	2.64
Fayette	95	54	78.9	1.04	Culbertson (1)	96	56	78.1	3.54
Greenville	94	57	78.3	2.44	Culbertson (2)	96	56	78.1	3.54
Hattiesburg	100	55	82.0	4.85	David City	90	36	67.4	3.00
Hastings	98	49	78.6	0.45	De Soto	96	44	70.0	0.96
Hernando	100	48	77.8	1.55	Dunning	94	50	69.4	3.60
Holly Springs (1)	93	54	77.2	2.50	Ericson	102	54	72.0	2.11
Holly Springs (2)	95	50	75.6	2.89	Fairbury	98	42	69.2	2.80
Jackson	98	50	79.8	0.73	Fort Niobrara	101	31	66.9	3.97
Kosciusko	94	49	76.8	1.21	Fort Omaha	99	42	73.5	1.68
Lake	93	40	77.3	0.14	Fort Robinson	96	40	70.0	1.94
Logtown	93	35	79.6	6.23	Fort Sidney	96	41	69.0	1.90
Louisville	100	43	77.8	1.91	Franklin	100	39	71.8	3.71
Macon	100	56	79.6	1.21	Fremont	92	45	71.2	1.27
Marysville	96	66	79.6	2.70	Geneva	92	45	71.2	1.27
Natchez	96	53	81.2	1.43	Genoa	93	45	69.8	1.91
Okolona	100	48	78.3	1.16	Gering	97	42	70.3	2.25
Pontotoc	93	49	73.4	1.07	Grant	97	37	68.1	5.31
Port Gibson	97	42	77.9	0.56	Hartington	96	36	69.5	5.04
Rienzi	97	58	77.8	1.84	Harvard	91	45	68.0	3.09
Ship Island	96	64	83.4	1.37	Hastings	94	44	69.2	3.38
Vaiden	101	45	78.7	1.94	Hay Springs	97	37	68.1	1.12
Water Valley	98	45	75.3	2.23	Hebron	93	42	72.3	3.23
Waynesboro' (1)	95	52	77.6	3.93	Holdegre	93	42	71.0	1.80
Waynesboro' (2)	100	52	80.8	3.75	Imperial	98	50	72.5	3.00
West Point	93	60	79.2	1.12	Kimball	97	35	69.0	1.75
Yazoo City	93	60	79.2	2.77	Lexington	97	40	69.4	1.43
Missouri.					Lincoln	95	43	71.0	2.42
Adrian	98	30	68.6	3.44	Long Pine	100	30	70.5	4.08
Austin	98	47	74.2	3.25	Marquette	98	47	69.2	4.78
Boonville	98	47	74.2	8.71	Minden	98	32	70.2	2.33
Brunswick	95	47	73.0	7.90	Nebraska City	94	43	70.5	5.12
Cape Girardeau	98	47	74.2	2.95	Norfolk	94	37	69.0	3.27
Carrollton	94	46	72.3	11.47	North Loup	93	34	70.0	3.38
Carthage	96	48	74.8	2.91	O'Neill	94	42	69.4	2.92
Centerville	98	39	72.2	4.93	Ough (2)	94	42	69.4	3.19
Chillicothe (1)	88	60	74.0	8.09	Plattsmouth.	94	54	74.9	3.00
Chillicothe (2)	98	48	61.0	10.50	Precept	94	54	74.9	3.00
Conception	89	44	70.6	7.17	Purple Cape	93	57	70.8	1.58
Concordia	97	58	79.8	4.89	Ravenna	95	36	69.5	3.40
Dadeville	97	58	79.8	4.89	Sargent.	95	36	69.5	3.40
Danngan.	97	58	79.8	4.89	Schuyler	100	45	69.9	2.22
East Lynn	99	48	74.2	4.34	Seward	96	50	70.4	1.80
Eight Mile	94	46	72.4	4.26	Springview	102	37	69.5	3.18
Eldon	102	54	76.2	8.06	Superior	106	65	78.8	1.82
Excelsior Springs	95	40	70.1	6.33	Syracuse	95	53	72.1	3.34
Fayette	96	45	73.2	5.83	Tecumseh	96	40	72.1	4.82
Fox Creek	93	52	73.0	5.40	Wallace	94	46	70.0	3.14
Glasgow	95	44	73.2	8.22	Weeping Water	98	39	68.7	3.48
Gordonville	91	48	72.4	4.47	West Hill	92	38	69.5	2.75
Harris	94	55	74.5	5.78	West Point.	90	41	69.5	2.20
Harrisonville	94	55	74.5	5.78	Whitman	92	49	71.2	2.06
Hermann	94	54	75.0	7.70	Wilcox.	92	49	71.2	2.06
Jefferson Barracks.	97	43	73.8	4.47	York	92	49	71.2	2.06
Jefferson City	96	48	74.8	7.56	Nebraska.				
Jerome	96	48	74.8	7.56	Austin	85	43	68.1	1.09
Kansas City	99	42	74.2	5.61	Battle Mountain.	96	52	79.5	0.00
Kidder	94	42	72.8	6.40	Belmont	87	36	67.2	1.10
Lamonte (2)	95	50	73.0	8.19	Beowawe	99	55	77.4	0.00
Langdon	95	50	73.0	8.19	Browns	103	64	83.8	0.35
Lebanon	94	48	75.2	3.32	Candelaria	90	23	73.0	0.00
Liberty	98	40	73.4	18.00	Carlin	100	43	71.9	0.00
Louisiana Bridge	96	46	72.8	2.67	Carson City	96	34	69.7	0.00
Marshall (2)	96	46	72.8	13.10	Cornes Ranch	96	34	69.7	0.00
Mine La Motte.	96	47	73.4	3.06	Downeyville	98	54	77.2	0.48
New Haven	102	56	75.1	3.66	Elko (1)	98	50	72.4	0.75
Oak Ridge	98	55	79.2	5.40	Ely	98	50	72.4	0.75
Oregon (1)	94	44	72.0	3.74	Eureka.	99	55	74.2	1.02
Oregon (2)	96	44	70.8	3.62	Fenelon	107	64	83.8	0.00
Pickering	88	39	64.8	4.62	Genoa	88	55	67.9	0.00
Platte River	94	38	73.1	3.65	Halleck	106	42	71.6	0.00
Princeton	97	46	71.8	8.12	Hawthorne (1)	95	60	79.6	0.00
Saint Charles (2)	94	48	73.6	2.76	Hawthorne (2)	98	46	75.3	0.00
Saint Joseph.	94	48	73.6	2.76	Hot Springs	100	64	78.1	0.00
Sarcozie	99	40	73.4	3.67	Humboldt	94	50	71.5	0.00
Sedalia	96	47	72.6	4.26	Lewers Ranch.	94	41	69.6	0.00
Shelbina	96	47	72.6	4.26	Mill City.	100	54	70.8	0.00
Springfield.	94	44	72.0	4.23	Monitors Ranch.	89	31	64.4	0.48
Steelville	94	46	72.2	13.10	Palisade	98	42	72.0	0.00
Stellada	94	45	64.2	5.11	Palmetto	92	33	65.8	3.31
Warrensburg	96	52	72.9	5.14	Pioche	98	47	74.2	0.47
Warrenton.	96	52	72.9	5.14	Reno	102	48	75.7	0.00
Withers Mills.	96	52	72.9	5.14	Reno State Univ	95	37	71.2	0.00
Zeitonia	96	52	72.9	5.14	Sodaville	101	53	76.8	0.19
Montana.					Sunnyside	98	55	63.0	0.40
Boulder Valley	92	36	65.0	0.82	Tecoma	100	50	73.9	0.00
Camp Poplar River.	99	35	66.8	0.82	Tocono	94	55	74.1	0.52
Choteau	90	38	61.9	1.10	Virginia City	91	64	75.0	0.00
Fort Assiniboine.	91	39	64.8	1.53	Wadsworth	108	56	80.2	0.00
Fort Cuater	100	40	73.8	0.52	Younts	98	54	75.1	0.00
Fort Keogh	103	40	71.2	0.10	Younts Ranch	98	58	81.0	0.20
Fort Missoula	96	36	64.8	0.10					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean.			Max.	Min.	Mean.	
<i>New Hampshire.</i>				<i>Ins.</i>	<i>New York—Cont'd.</i>				<i>Ins.</i>
Belmont	88	33	63.1	4.59	Central Park, N. Y.	98	57	75.4	4.51
Berlin Mills	88	33	63.1	5.84	Chenango Forks	98	57	75.4	4.51
Concord	87	45	67.6	2.95	Cherry Creek	98	57	75.4	4.51
East Canterbury	88	39	66.8	3.94	Constableville	89	38	61.7	4.34
Groveton	85	45	63.8	2.96	Cooperstown	87	45	66.0	4.26
Hanover (1)	84	46	64.6	3.21	Davids Island	96	54	72.4	4.50
Hanover (2)	91	42	66.0	3.34	De Kalb Junction	98	57	75.4	4.51
Lake Village	89	41	63.6	3.16	Demster	98	57	75.4	4.51
Littleton	88	41	63.6	5.30	Deposit	98	57	75.4	4.51
Manchester	88	45	68.7	2.38	Dunkirk (2)	98	57	75.4	4.51
Mine Falls	94	47	69.2	1.68	Easton	98	57	75.4	4.51
Nashua	94	47	69.2	1.60	Eden Centre	90	38	67.3	3.70
Newton	91	47	67.8	2.23	Factoryville	92	41	67.6	3.31
North Conway	89	40	66.1	5.09	Fleming	94	46	68.5	3.27
Pennichuck Station	96	40	64.7	1.44	Fort Columbus	95	57	73.8	6.23
Plymouth	91	38	67.0	2.75	Fort Hamilton	93	58	72.4	5.05
Stratford	91	38	67.0	2.75	Fort Niagara	92	50	69.0	4.11
Walpole	85	46	66.8	5.28	Fort Porter	98	40	67.0	3.40
West Milan	88	34	62.4	2.64	Fort Schuyler	92	56	72.2	3.86
Wiers Bridge	94	47	69.2	4.07	Fort Wadsworth	96	54	73.6	7.00
Wolfborough	94	47	69.2	3.70	Geneva	94	45	67.8	3.93
<i>New Jersey.</i>					Hammondsport	96	42	65.6	4.87
Allaire	93	47	70.4	6.68	Hess Road Station	90	42	66.4	5.91
Asbury Park	90	54	72.2	6.68	Honeymead Brook	90	46	68.2	2.64
Bayonne	97	52	73.5	6.53	Humphrey	87	41	65.2	6.63
Belleville	97	52	73.5	5.12	Hyndsville	93	42	66.3	4.08
Belvidere	97	52	73.5	5.11	Ithaca	92	47	68.8	3.24
Beverly	96	52	71.7	5.71	Keene Valley	97	43	62.8	2.35
Billingsport L. H.	94	59	75.1	3.92	Le Roy	88	42	67.5	5.33
Blairtown	95	50	71.0	6.02	Liberty	90	44	65.4	4.87
Bridgeton	93	55	74.8	5.12	Lockport	90	44	65.4	4.87
Camden	94	54	73.8	3.95	Lowville	93	42	66.3	3.30
Cape May C. H.	90	55	73.0	4.02	Lyndonville	90	44	65.4	4.87
Deckertown	94	48	70.4	4.91	Lyon Mountain (2)	90	44	65.4	4.87
Dover	97	46	70.7	8.59	McLean	90	44	65.4	4.87
Egg Harbor City	95	51	72.1	5.97	Madison Barracks	92	39	68.0	2.00
Franklinville	91	49	71.8	5.16	Malone	89	43	64.4	4.86
Freehold	94	51	72.0	3.36	Marshall	90	39	68.2	7.89
Gillette	98	46	70.4	4.41	Middletown	93	51	68.3	4.32
Hanover	93	46	70.4	4.51	Minnewaska	85	46	65.4	4.65
Highland Park	98	48	73.0	3.08	Mount Morris	91	40	67.3	3.66
Hightstown	88	54	70.5	6.82	Newark Valley	90	44	65.4	4.87
Imlaystown	96	53	73.6	6.23	New Lisbon	88	42	62.7	5.59
Junction	93	52	72.3	7.46	North Hammond	82	50	66.2	5.18
Lambertville	93	52	72.3	6.42	Number Four	86	42	61.9	4.12
Locktown	94	50	72.3	8.89	Ogdensburg (1)	86	46	64.9	6.33
Moorestown	94	53	71.9	4.52	Ogdensburg (2)	90	47	68.3	6.03
Mount Holly	93	53	73.0	4.52	Oxford	85	44	64.8	6.03
Newark (1)	93	50	72.4	4.61	Palermo	90	40	67.3	3.05
New Brunswick (1)	98	50	74.2	6.58	Palmyra	95	50	69.3	3.19
New Brunswick (2)	95	51	71.9	6.35	Pawling	90	44	65.4	4.87
Newton	91	53	71.2	4.48	Perry City	91	41	65.2	3.90
Oceanic	94	50	75.0	4.61	Plattsburgh	88	45	66.4	3.24
Paterson	98	52	72.9	3.38	Plattsburgh B'ks	88	45	66.4	3.55
Rancocas	100	47	73.0	4.76	Port Jervis	91	48	66.6	6.77
Somerville	100	47	73.0	4.76	Potomac	89	44	70.8	4.12
South Orange	92	50	70.8	5.31	Poughkeepsie	97	45	64.5	4.13
Tenafly	90	52	73.3	3.04	Quaker Street	90	46	64.5	4.13
Trenton	97	58	79.0	5.89	Schodack Depot	87	40	62.7	2.66
Vineland	93	53	73.7	7.18	Sherman	90	52	70.8	3.43
Whiting	96	50	74.3	2.58	Schodack Depot	87	40	62.7	2.66
Woodbury	96	50	74.3	1.09	South Canisteo	90	38	63.7	5.80
<i>New Mexico.</i>					S. E. Reservoir	90	38	63.7	5.80
Albert	100	55	77.5	0.98	South Kortright	90	38	63.7	5.80
Antelope Springs	92	44	68.5	0.86	Turin	96	43	68.3	4.92
Bernalillo	92	44	68.5	0.86	Utica	90	47	67.5	3.32
Coolidge	82	30	53.2	1.82	Victor	86	44	66.2	4.04
Dalco	92	36	65.3	1.48	Wappingers Falls	91	52	70.2	4.50
Embudo	92	36	65.3	1.48	Watervliet Arsenal	93	45	67.9	3.24
Estalona Springs	93	40	67.5	0.72	Watkins	91	45	67.9	3.24
Fort Bayard	98	46	71.6	1.82	West Chazy	90	35	62.4	4.88
Fort Stanton	94	41	67.6	1.36	White Plains	90	60	71.3	1.91
Fort Wingate	92	43	69.4	1.23	Willetts Point	93	53	72.4	4.90
Gallinas Spring	94	52	76.6	0.71	<i>North Carolina.</i>				
Hillsborough	95	53	75.6	1.87	Asheville	89	52	70.0	7.86
La Luz	94	48	70.1	0.89	Bakersville	88	52	69.8	4.23
Lordsburg	93	49	72.2	1.10	Bryson City	90	55	77.8	11.71
Los Lunas	103	69	82.2	0.00	Concord	94	59	77.0	9.00
Monero	86	34	59.9	1.33	Currituck Inlet	90	55	77.0	9.00
Nogal	98	48	72.5	1.99	Fayetteville	92	45	69.0	2.80
Olio	98	48	72.5	1.99	Franklin	92	45	69.0	2.80
Poiquaque	96	48	72.8	1.16	Goldsborough	94	58	79.7	10.78
Red Cañon	96	48	72.8	1.16	Hendersonville	84	62	73.0	7.00
Springer	96	48	72.8	1.16	Lenoir	88	58	72.6	5.90
Taos	96	48	72.8	1.16	Lexington	96	58	76.3	8.09
<i>New York.</i>					Littleton	95	52	74.9	10.29
Addison	90	42	65.8	4.24	Louisburgh	87	56	75.1	8.49
Akron	88	51	66.4	4.19	Lumberton	95	61	79.3	10.64
Albion	88	51	66.4	4.19	Morganton	97	57	73.9	6.04
Alfred Centre	84	39	63.3	5.01	Mount Airy	91	56	72.6	7.23
Angelica	87	38	63.4	5.39	Mount Holly	91	56	72.6	7.23
Apulia	87	38	63.4	5.39	Murphy	90	60	76.3	11.57
Arcade (1)	86	37	63.6	5.00	New Bern	92	60	76.3	11.57
Arcade (2)	86	37	63.6	5.00	Oak Ridge	94	53	74.8	7.26
Avon	86	37	63.6	5.00	Pittsborough	91	50	75.0	8.80
Baldwinsville	94	45	68.3	2.10	Raleigh	94	57	77.0	9.70
Batavia	94	45	68.3	2.10	Salisbury	92	60	78.0	7.19
Bedford	94	45	68.3	2.10	Smithfield	91	57	76.0	16.30
Bethlehem Centre	94	45	68.3	2.10	Soapstone Mount	97	52	77.8	10.58
Binghamton	92	38	67.1	6.59	Southern Pines	97	52	77.8	10.58
Boys Corners	91	59	73.4	5.61	Wadesborough	94	54	75.7	9.12
Brentwood	89	51	71.8	5.07	Wadeville	91	56	76.2	9.43
Brookfield	90	49	65.0	5.60	Weldon	95	56	75.6	8.79
Canterbury	91	43	65.9	0.66					
Carmel	94	52	71.4	4.80					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>N. Carolina—Cont'd.</i>					<i>Oregon—Cont'd.</i>				
Willeton	91	56	76.0	9.15	Forest Grove	100	45	68.2	0.70
<i>North Dakota.</i>					Gardiner	82	51	64.2	0.64
Carrington	98	30	62.8	0.30	Gooseberry	105	47	72.0	0.71
Churches Ferry	90	28	61.4	0.88	Grants Pass	105	47	72.0	0.71
Davenport	94	34	65.8	1.51	Hardman	98	42	69.0	0.00
Ellendale	100	25	69.3	0.41	Heppner	100	43	69.1	0.12
Fargo	95	31	65.2	2.96	Hood River	94	46	69.0	0.05
Fort Buford	94	35	65.0	0.07	Hubbard	95	41	65.3	1.43
Fort Pembina	93	30	64.5	3.10	Jacksonville	98	46	70.4	0.10
Fort Yates	103	35	69.0	0.42	John Day Junction	100	42	70.4	T.
Gallatin	98	28	62.8	0.88	Joseph	90	39	63.0	0.77
Grafton	92	29	62.9	2.09	La Grande	96	37	68.4	0.45
Grand Forks	92	32	64.7	1.37	Lakeview	102	33	68.6	0.15
Grand Rapids	102	23	68.6	0.16	Lone Rock	98	35	64.8	0.06
Hope	93	31	62.8	0.81	McMinnville	102	43	67.9	0.36
Kelso	93	30	65.2	0.99	Mount Angel	96	51	70.0	1.45
Lakota	95	30	62.1	2.00	Newburg	100	49	69.8	0.96
Napoleon	96	32	64.8	1.24	Pendleton	107	43	70.4	0.00
Power	94	31	67.7	0.14	Siskiyou	96	45	68.1	0.00
Saint Thomas	90	29	62.5	2.24	Telocast	96	45	68.1	0.00
Steeles	96	28	60.4	0.56	The Dalles	98	45	71.2	0.11
Wahpeton	94	32	66.2	0.77	Toledo	89	47	66.5	0.70
Wild Rice	94	32	66.2	0.77	Vernonia	98	44	64.5	1.24
Willow City	94	24	63.4	1.02	Weston	100	43	70.5	0.44
<i>Ohio.</i>					New Bridge	96	46	71.3	0.00
Akron	93	46	68.9	2.67	<i>Pennsylvania.</i>				
Ashland	95	46	70.9	3.15	Allegheny Arsenal	95	45	71.2	1.92
Athens	94	43	70.7	5.17	Altoona	95	50	72.8	3.13
Bangorville	101	41	69.1	2.86	Aqueduct	98	50	71.6	6.40
Bellevue	98	40	68.4	0.60	Blooming Grove	94	53	69.0	5.90
Bement	98	43	68.3	1.14	Blue Knob	90	40	66.5	5.00
Caledonia	93	43	68.8	3.05	Brookville	90	40	66.5	5.00
Canton	93	43	68.8	2.19	Clarion (1)	100	40	68.6	3.43
Celina	94	49	71.1	4.05	Clarion (2)	100	40	68.6	4.16
Circleville (1)	92	49	71.1	4.10	Confluence	94	38	63.4	3.79
Circleville (2)	93	47	70.2	3.78	Corry	94	38	63.4	3.79
Cleveland	92	49	68.7	3.23	Davis Island Dam	94	40	65.0	4.75
Columbus Barracks	94	45	71.1	3.15	Do Bois	92	52	71.4	5.13
Dayton	95	48	72.3	3.20	Dyberry	94	40	65.0	4.75
Demos	91	49	69.2	2.11	Easton	92	52	71.4	5.13
Ellsworth	92	49	69.2	2.22	Edinborough	88	40	65.8	4.75
Findlay	94	42	69.9	1.90	Frankford Arsenal	96	53	73.6	5.75
Garrettsville	92	40	65.0	2.43	Freeport	92	40	65.8	4.75
Georgetown	97	54	71.4	5.62	Grampian Hills	91	44	67.5	4.08
Granville	92	44	68.2	1.92	Greensborough	96	55	73.2	7.28
Gratiot	90	46	69.7	4.05	Kilmer	96	55	73.2	7.28
Greenfield	90	46	69.0	3.84	Le Roy	90	47	68.7	4.33
Greenville	90	48	68.2	3.25	Lock Haven	100	49	69.8	0.96
Hanging Rock	95	48	71.6	4.15	Lock No. 4	100	49	69.8	0.96
Hassan	96	51	74.1	2.36	Mahoning	100	49	69.8	0.96
Hiram	91	47	67.8	2.54	Mesheppen	100	49	69.8	0.96
Hudson	92	49	69.2	2.22	Oil City	96	46	70.4	0.00
Jacksonborough	96	48	73.0	2.50	Parker's Landing	96	46	70.4	0.00
Kenton	96	44	70.8	3.26	Philadelphia (1)	96	47	70.4	0.00
Logan	96	45	69.4	4.80	Philadelphia (2)	94	52	72.8	8.37
Lordstown	93	37	66.4	1.69	Phoenixville	94	52	72.8	8.37
Manchester	88	51	71.0	1.00	Pleasant Mount	96	55	73.2	7.28
Manassett	92	49	69.2	2.22	Quakertown	100	49	69.8	0.96
Marietta (1)	92	49	69.2	2.22	Ridgway	96	46	70.4	0.00
Marietta (2)	92	49	69.2	2.22	Salem Corners	91	46	67.0	6.06
Marion	92	49	69.2	2.22	Saltburg	96	46	70.4	0.00
McConnelsville	91	44	70.4	3.44	Stoyestown	91	46	67.0	6.06
Montpelier	97	40	69.1	3.91	Troy	90	43	66.3	3.51
Napoleon	98	44	75.80	4.13	Warren	90	43	66.3	3.51
New Alexandria	92	45	70.4	2.85	Wellsborough	86	36	62.0	3.57
New Comerstown	94	49	67.2	3.22	West Chester	93	53	72.2	8.85
New Holland	93	45	70.0	2.69	West Newton	96	45	70.4	0.00
North Lewisburgh	96	47	71.9	1.70	Wilkes Barre	96	45	70.4	0.00
Oberlin	96	43	67.9	1.25	<i>Rhode Island.</i>				
O. S. University	94	45	69.7	1.80	Bristol	88	58	71.0	2.26
Orangeville	93	35	67.3	1.15	Fort Adams	95	53	69.6	1.45
Pomeroy	94	43	73.1	3.50	Kingston (1)	93	47	70.5	2.25
Portsmouth (1)	95	45	71.8	4.18	Kingston (2)	91	48	69.4	3.29
Portsmouth (2)	95	45	71.8	4.18	Lonsdale	94	54	73.1	5.91
Sidney	95	47	69.3	1.60	Oleynville	94	54	73.1	5.91
Springborough	93	40	69.8	2.43	Pawtucket	96	56	72.1	6.26
Timin	95	47	69.3	1.60	Providence (1)	96	56	72.1	6.26
Upper Sandusky	93	40	69.8	2.43	Providence (2)	96	56	72.1	6.26
Van Wert	96	43	70.0	3.35	Providence (3)	93	50	70.6	6.54
Wapakoneta	97	46	70.0	2.22	<i>South Carolina.</i>				
Wauseon	100	39	69.9	3.43	Aiken	95	56	76.9	14.09
Waverly	99	44	71.1	3.95	Allendale	95	56	76.9	14.09
Waynesville	97	48	68.5	3.19	Batesburg	95	51	76.7	11.05
Westerville	91	46	71.0	1.49	Belmont	93	56	76.4	6.91
West Milton	96	50	73.0	5.90	Blackville	95	56	76.4	6.91
Weymouth	96	45	69.0	2.44	Branchville	94	60	78.8	10.99
Wheeler	96	45	69.0	2.44	Brewer Mine	96	57	78.2	10.19
Youngstown	93	43	69.4	1.72	Cheraw (1)	94	57	78.6	8.85
Zanesville	93	43	69.4	1.72	Cheraw (2)	94	57	78.6	8.85
<i>Oklahoma Ter.</i>					Chester	95	57	78.8	4.30
Fort Reno	100	48	76.4	1.02	Effingham	95	57	78.8	4.30
Fort Sill	101	52	78.4	1.10	Evergreen	95	60	77.0	6.06
Guthrie	99	56	80.1	1.21	Florence	96	55	80.6	5.70
<i>Oregon.</i>					Greenville	96	55	74.1	6.84
Albany	99	46	67.2	1.15	Greenwood	98	53	79.0	4.94
Arlington	102	53	75.6	0.27	Hardeeville	96	56	80.5	14.79
Ashland (1)	97	51	71.5	0.00	Jacksonborough	94	62	79.6	14.59
Ashland (2)	101	45	71.4	0.10	Kingstree	98	58	79.6	13.95
Bandon	78	50	61.1	1.87	Kitchens Mills	91	63	78.4	8.52
Beulah	100	38	67.8	0.14	Nichols	91	63	78.4	8.52
Cascade Locks	93	54	69.7	1.84	Port Royal	93	66	80.6	14.00
Corvallis	99	44	67.3	0.55	Saint Georges	92	62	79.0	10.61
Deer Island	95	45	67.3	1.05	Saint Matthews	95	60	79.3	7.61
East Portland	95	45	67.3	1.05	Simpsonville	96	58	76.4	5.70
Eola	95	43	66.4	0.54	Society Hill	88	54	76.8	9.50
					Spartanburg (2)	94	58	77.8	8.05
					Statesburg	96	50	75.3	8.75

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>S. Carolina—Cont'd.</i>					<i>Texas—Cont'd.</i>				
Trial.....	93	68	73.3	10.83	Durham.....	103	68	83.6	1.90
Waltham.....	98	60	79.4	6.75	Duval.....	103	66	83.6	1.70
Watson.....	98	60	79.4	6.75	Fort Bliss.....	104	66	83.8	0.31
Winnabow.....	98	60	79.4	6.75	Fort Clark.....	103	66	83.8	0.31
Yorkville.....	98	57	77.0	7.98	Fort Hancock.....	109	59	79.5	0.00
<i>South Dakota.</i>					Fort McIntosh.....	101	59	84.0	2.10
Aberdeen.....	103	48	67.4	0.63	Fort Ringgold.....	107	58	85.8	0.00
Brookings.....	100	30	66.3	1.38	Fredericksburgh.....	100	53	79.0	2.50
Castlewood.....	99	25	65.0	1.92	Gainesville.....	104	58	81.8	2.53
Clark.....	100	32	69.6	1.03	Gallatin.....	104	54	81.9	0.99
Cross.....	90	34	63.3	3.41	Graham.....	109	53	81.9	1.11
De Smet.....	98	34	67.2	0.20	Grapevine.....	104	52	81.1	0.36
Forestburg.....	100	31	67.6	2.33	Hansford.....	102	48	76.6	2.31
Forest City.....	112	41	75.8	0.57	Haskell.....	99	48	74.0	0.35
Forestburg.....	98	32	67.9	2.18	Hayward.....	96	39	66.0	1.07
Fort Bennett.....	106	36	73.0	2.29	Kenosha.....	94	39	66.0	1.07
Fort Meade.....	100	40	70.0	1.50	Lincoln.....	92	46	68.4	1.41
Fort Randall.....	95	35	67.8	2.84	Madison.....	99	40	67.4	2.43
Fort Sully.....	100	41	72.8	1.41	Manitowish.....	92	46	68.4	1.41
Gary.....	97	36	62.1	0.72	Mason.....	96	39	65.0	5.70
Highmore.....	95	30	67.7	1.81	Medford.....	96	34	63.6	2.02
Howard.....	95	30	67.7	1.81	Medford (a).....	97	31	63.0	2.63
Kimball.....	103	33	67.1	2.91	Medford (b).....	97	31	63.0	2.63
Millbank.....	102	30	73.0	0.55	Menomonie.....	100	32	66.2	3.85
Mitchell.....	104	33	67.6	1.86	Neillsville.....	95	32	63.8	3.21
Neilsen.....	94	33	70.9	1.66	New Holstein.....	101	43	63.1	1.87
Onida.....	102	35	65.7	0.33	Oconomowoc.....	98	44	68.5	2.70
Parker.....	99	39	69.0	0.73	Oconto.....	97	41	66.5	1.02
Parkston.....	98	42	68.7	4.00	Oshkosh.....	98	46	68.1	1.91
Plankinton.....	98	42	68.7	4.00	Peshtigo.....	95	37	66.8	2.06
Saint Lawrence.....	98	42	68.7	4.00	Phillips.....	94	38	64.2	5.25
Sioux Falls.....	98	42	68.7	4.00	Plover.....	99	35	65.4	2.78
Spearsfish.....	98	42	68.7	4.00	Portage.....	98	38	64.2	2.01
Tyndall.....	98	42	68.7	4.00	Prairie du Chien.....	98	38	64.2	2.01
Wessington Springs.....	102	35	69.0	2.14	Rhineland.....	95	31	62.4	5.48
Wolsey.....	102	35	70.4	1.83	Shawano.....	97	37	65.6	2.79
<i>Tennessee.</i>					Shell Lake.....	95	39	64.1	1.74
Andersonville.....	95	51	76.2	3.31	Shoreland.....	94	40	66.4	3.18
Arlington.....	96	47	75.0	1.12	Sioux Falls.....	97	40	67.5	1.47
Ashwood.....	91	50	73.7	2.69	Watertown.....	98	42	69.2	0.71
Austin.....	91	50	73.7	2.69	Weston.....	98	34	64.4	2.65
Bethel Springs.....	96	50	73.6	0.09	Whitehall.....	99	33	67.3	2.20
Bolivar.....	96	50	73.6	0.09	<i>Wyoming.</i>				
Brownsville.....	96	48	73.6	0.09	Camp Pilot Butte.....	94	34	65.2	0.40
Carthage.....	96	48	73.6	0.09	Evansville.....	94	37	65.1	1.06
Charleston.....	96	48	73.6	0.09	Fort D. A. Russell.....	90	27	61.6	2.04
Clarksville.....	95	50	74.6	10.38	Fort Fetterman.....	105	40	72.2	1.40
Clinton.....	95	50	74.6	10.38	Fort McKinney.....	91	36	69.4	0.37
Columbia.....	95	50	74.6	10.38	Fort Washakie.....	90	39	71.0	0.31
Covington (1).....	98	50	74.4	1.86	Fort Yellowstone.....	99	35	62.2	1.22
Covington (2).....	98	50	74.4	1.86	Grandview.....	92	37	65.4	2.62
Dunlap.....	91	52	73.9	5.73	Lander.....	97	41	68.6	0.54
Dyersburg (2).....	100	42	75.8	1.42	Laramie (1).....	93	33	61.0	1.74
Fayetteville.....	94	54	75.2	2.28	Laramie (2).....	92	34	61.0	1.76
Florence Station.....	92	56	75.6	2.77	Lusk.....	90	37	66.0	0.72
Franklin.....	95	56	73.8	3.25	Sundance.....	96	38	64.4	2.03
Grand Junction.....	94	47	74.3	6.23	Wheatland.....	96	34	65.7	0.50
Greenville.....	84	37	70.7	10.04	<i>Mexico.</i>				
Harriman.....	93	36	78.4	2.89	Guanajuato.....	89	51	66.7	4.60
Hohenwald.....	97	44	78.4	2.89	Leon de Aldemas.....	88	53	69.9	4.05
Jacksonboro.....	90	51	73.2	6.97	Pueblo.....	80	48	64.8	5.76
Johnsonville.....	90	51	73.2	6.97	Topolobampo.....	94	81	86.7	3.72
Kingston (1).....	90	51	73.2	6.97	<i>New Brunswick.</i>				
Kingston Springs.....	90	51	73.2	6.97	Saint John.....	75	50	61.7	5.41
Lewisburg.....	90	51	73.2	6.97	<i>Newfoundland.</i>				
Livingston.....	90	51	73.2	6.97	Saint John.....	84	44	60.2	4.91
London.....	90	51	73.2	6.97	<i>Hawaiian Islands.</i>				
Lynnville.....	90	51	73.2	6.97	Honolulu.....	87	69	79.6	1.38
McMinnville.....	90	51	73.2	6.97	<i>West Indies.</i>				
Milan.....	90	51	73.2	6.97	Grand Turk Island.....	86	71	79.4	10.86
Missionary Ridge.....	90	51	73.2	6.97	Hamilton, Bermuda.....	86	71	79.4	10.86
Newport.....	90	51	73.2	6.97					
Northville.....	90	51	73.2	6.97					
Nunnally.....	90	51	73.2	6.97					
Parkville.....	90	51	73.2	6.97					
Riddletown.....	90	51	73.2	6.97					
Rockwood.....	90	51	73.2	6.97					
Rogersville.....	90	51	73.2	6.97					
Rugby.....	90	51	73.2	6.97					
Savannah.....	90	51	73.2	6.97					
Sharp.....	90	51	73.2	6.97					
Springdale.....	90	51	73.2	6.97					
Strawberry Plains.....	90	51	73.2	6.97					
Trenton.....	90	51	73.2	6.97					
Union City.....	90	51	73.2	6.97					
Waynesborough.....	90	51	73.2	6.97					
<i>Texas.</i>									
Arthur City.....	100	70	85.5	1.89					
Austin (1).....	100	70	85.5	1.89					
Austin (2).....	100	70	85.5	1.89					
Berlin.....	100	70	85.5	1.89					
Big Spring.....	100	70	85.5	1.89					
Brady.....	100	70	85.5	1.89					
Brasoria.....	100	70	85.5	1.89					
Brenham.....	100	70	85.5	1.89					
Burnet.....	100	70	85.5	1.89					
Camp Eagle Pass.....	100	70	85.5	1.89					
Coppe Colorado.....	100	70	85.5	1.89					
College Station.....	100	70	85.5	1.89					
Colorado (1).....	100	70	85.5	1.89					
Columbia.....	100	70	85.5	1.89					
Corcoran (1).....	100	70	85.5	1.89					
Corcoran (2).....	100	70	85.5	1.89					
Dallas (2).....	100	70	85.5	1.89					

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Virginia—Cont'd.</i>					<i>Wisconsin—Cont'd.</i>				
Richmond.....	103	53	78.5	5.86	Hayward.....	94	27	61.6	1.81
Standardsville.....	94	57	75.9	4.79	Hillsborough.....	96	30	65.0	1.36
Staunton.....	94	53	72.4	4.62	Honey Creek.....	96	46	68.3	1.33
Summit.....	91	30	70.6	3.86	Hudson.....	47	65.2	3.75	
Woodstock.....	86	35	70.8	4.35	Janesville.....	99	43	71.3	
<i>Washington.</i>					Kenosha.....	95	45	67.4	1.62
Aberdeen.....	92	46	62.9	2.02	Koepnick.....	94	36	65.0	5.70
Chehalis.....	94	39	66.0	1.07	Lancaster.....	96	38	67.4	2.05
Doz Bay.....	75	48	60.8	3.26	Lincoln.....	92	46	68.4	1.41
East Sound.....	82	48	63.0	3.14	Madison.....	99	40	67.4	2.43
Fort Canby.....	82	51	63.4	2.30	Manitowish.....	92	46	68.4	1.41
Fort Simcoe.....	101	55	78.0	0.14	Mason.....	96	29	62.5	
Fort Spokane.....	103	45	71.6	0.25	Meadow Valley.....	96	34	63.6	2.02
Fort Townsend.....	82	44	61.2	2.52	Medford (1).....	97	31	63.0	2.63
Fort Walla Walla.....	106	51	74.8	0.04	Medford (2).....	97	31	63.0	2.63
Lapush.....	69			3.14	Menomonie.....	100	32	66.2	3.85
Madrone.....	84	45	65.6	2.16	Neillsville.....	95	32	63.8	3.21
Tacoma.....	91	47	66.8	2.76	New Holstein.....	101	43	63.1	1.87
Vancouver B'ks.....	100	44	69.8	1.30	Oconomowoc.....	98	44	68.5	2.70
Vashon.....	91	43	67.9	0.18	Oconto.....	97	41	66.5	1.02
Waterville.....	95	36	68.4	0.97	Oscola Millst.....	98	31	65.7	1.91
<i>West Virginia.</i>					Oshkosh.....	98	46	68.1	1.91
Backhannon.....				7.10	Pepin.....	95	37	66.8	2.06
Charleston.....				6.48	Peshtigo.....	94	38	64.2	5.25
Ella.....	86	54	68.7	4.79	Phillips.....	96	30	61.0	5.12
Glenville.....				6.14	Plover.....	99	35	65.4	2.78
Harpers Ferry.....				3.48	Portage (1).....				2.01
Hinton.....				4.62	Prairie du Chien.....	98	38	70.1	2.32
Kingwood.....	87	50	67.9		Rhineland.....	95	31	62.4	5.48
Morgantown.....				7.45	Shawano.....	97	37	65.6	2.79
Pleasant Hill.....	88	46	65.6		Shell Lake.....	95	39	64.1	1.74
Point Pleasant.....				3.41	Viroqua.....	94	40	66.4	3.18
Roxleyburg (1).....				5.49	Watertown.....	97	40	67.5	1.47
Tannery.....	90	51	69.6		Westfield.....	98	42	69.2	0.71
Weston.....				9.85	Weston.....	98	34	64.4	2.65
Wheeling (1).....				2.61	Whitehall.....	99	33	67.3	2.20
Wheeling (2).....	97	52	75.2		<i>Wyoming.</i>				
White Sulph' Springs.....				4.40	Camp Pilot Butte.....	94	34	65.2	0.40
<i>Wisconsin.</i>					Evansville.....	94	37	65.1	1.06
Amherst.....	98	39	67.6	2.26	Fort D. A. Russell.....	90	27	61.6	2.04
Appleton (1).....	99			1.45	Fort Fetterman.....	105	40	72.2	1.40
Baraboo.....	95	37	65.8	1.72	Fort McKinney.....	91	36	69.4	0.37
Barron.....	89	25	59.2	1.42	Fort Washakie.....	90	39	71.0	0.31
Bayfield.....	86	41	63.3	3.26	Fort Yellowstone.....	89	35	68.2	1.32
Beaver Dam.....	97	42	64.7	1.48	Grandview.....	92	37	65.4	2.62
Berlin.....	98	40	70.4	2.60	Lander.....	87	41	68.6	0.54
Black River Falls.....	101	39	69.8	1.78	Laramie (1).....	83	33	61.0	1.74
Butternut.....	94	31	61.9	2.53	Laramie (2).....	82	34	61.0	0.76
Cadiz.....				1.40	Lusk.....	90	37	66.0	1.72
Centralia.....	96	32	65.6	3.48	Sundance.....	96	38	64.4	2.02
Chippewa Falls.....				1.79	Wheatland.....	96	34	65.7	0.50
Columbus.....	100	41	67.2	1.62	<i>Mexico.</i>				
Crandon.....	95	28	60.4	6.86	Guajuato.....	89	51	66.7	4.60
Cumberland.....	98	30	65.9	1.08	Leon de Aldemas.....	88	53	69.9	4.05
De Pere.....	95	44	67.0	3.56	Pueblo.....	80	48	64.8	5.76
Dodgeville.....	94	48	72.2	1.63	Topolobampo.....	94	81	86.7	3.72
Eau Claire (1).....	97	36	68.6	1.70	<i>New Brunswick.</i>				
Ellsworth.....	90	39	64.1	3.50	Saint John.....	75	50	61.7	5.41
Elroy.....	104	42	70.2	1.93	<i>Newfoundland.</i>				
Embarrass.....	95	46	66.7	5.30	Saint Johns.....	84	44	60.2	4.91
Florence.....	88	30	61.9	4.40	<i>Hawaiian Islands.</i>				
Fond du Lac.....	98	40	66.1	2.17	Honolulu.....	87	69	79.6	1.38
Hammond.....	94	36	66.0	2.20	<i>West Indies.</i>				
Harvey.....	99	42	68.3	1.54	Grand Turk Island.....				4.70
					Hamilton, Bermuda.....	86	71	79.4	10.86

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.)			Precip'n.	Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean			Max.	Min.	Mean	
<i>Pennsylvania—Con.</i>				<i>Ins.</i>	<i>Pennsylvania—Con.</i>				<i>Ins.</i>
Johnstown.....	94	43	70.5	3.59	Smithport.....	90	42	65.8	5.15
Kennett Square*.....	83	56	70.4	6.74	Smiths Corners.....	.....	.....	.....	10.18
Lansdale.....	.....	.....	.....	6.62	Somerset.....	93	45	66.4	5.02
Lebanon.....	94	47	70.4	5.06	South Eaton.....	89	47	67.7	4.15
Lewisburgh.....	93	47	71.2	9.42	State College.....	92	45	68.3	5.40
Ligonier.....	92	40	68.9	2.81	Swarthmore.....	95	43	72.6	7.54
Mauch Chunk.....	93	46	67.9	5.89	Uniontown.....	91	43	71.0	8.85
Meadville.....	92	.....	66.7	.....	Wysox.....	93	42	67.0	3.49
McConnellsburgh.....	95	44	70.3	4.82	York.....	95	48	71.3	3.29
New Castle.....	95	38	72.2	1.51	<i>South Dakota.</i>				
Ottaville.....	.....	.....	7.85	.....	Alexandria†.....	100	31	67.8	1.40
Philadelphia(2).....	99	54	74.5	5.30	<i>Texas.</i>				
Point Pleasant.....	.....	.....	9.36	.....	Brownwood†.....	102	46	76.3	2.90
Pottstown.....	96	54	74.1	7.01	Cuero.....	101	54	84.4	1.35
Reading.....	.....	.....	11.77	.....	Mountain Spring.....	105	53	80.8	0.95
Rush Valley.....	.....	.....	72.5	4.90	Panther.....	106	54	79.0	2.09
Seisholtzville.....	.....	.....	7.18	.....	<i>Washington.</i>				
Selins Grove.....	95	40	69.0	7.18	Chelan†.....	96	47	74.4	0.09

Received too late for publication in July, 1891.

<i>California.</i>					<i>New Mexico.</i>				
Campo.....	.....	.....	89.0	0.00	Gallinas Spring.....	92	53	77.0	2.00
Laguna.....	.....	.....	1.15	.....	<i>North Dakota.</i>				
Placerville(2).....	101	45	73.4	0.00	Jamestown†.....	85	.....	.....	6.29
Riverside(1).....	112	50	78.2	T.	Steele.....	87	37	65.6	4.08
Santa Maria.....	.....	.....	0.00	.....	<i>Ohio.</i>				
<i>Colorado.</i>					Marietta(1).....	.....	.....	5.21	.....
Aspen.....	92	37	64.5	2.19	Portsmouth(1).....	.....	.....	3.52	.....
Garnett.....	.....	.....	1.82	.....	<i>South Carolina.</i>				
Idaho Springs.....	85	41	60.2	1.97	Kingstree.....	96	58	78.2	7.99
Stunner.....	77	30	53.8	3.56	<i>South Dakota.</i>				
<i>Kentucky.</i>					Howard.....	89	37	66.8	0.76
Burkesville.....	.....	.....	2.15	.....	Onida.....	90	40	63.9	0.77
Catlettsburgh.....	.....	.....	2.98	.....	<i>Texas.</i>				
Falmouth.....	.....	.....	8.10	.....	Snyder.....	65	78.4	0.98	.....
Frankfort(1).....	.....	.....	3.17	.....	<i>Utah.</i>				
Louis.....	.....	.....	3.85	.....	Castle Gate.....	93	42	70.3	1.14
Williamsburgh.....	.....	.....	2.30	.....	Green River.....	.....	.....	1.43	.....
<i>Louisiana.</i>					Park City.....	.....	.....	62.4†	0.08
Coushatta(2).....	98	59	81.2	5.90	Seefeld.....	86	50	61.8	0.50
<i>Mississippi.</i>					<i>West Virginia.</i>				
Palo Alto.....	93	50	76.9	15.58	Charleston.....	.....	.....	3.31	.....
Pontotoc.....	93	58	74.5	6.14	Hinton.....	.....	.....	2.47	.....
<i>Missouri.</i>					Point Pleasant.....	.....	.....	4.82	.....
Appleton City.....	92	52	74.1	6.32	Wheeling(1).....	.....	.....	7.10	.....
Warrensburg.....	90	53	71.9	3.35	White Sulphur Sp'gs.....	.....	.....	3.40	.....
<i>Nebraska.</i>					<i>Hawaiian Islands.</i>				
Fairfield.....	96	51	71.7	5.92	Honolulu.....	87	71	79.0	1.47
Grand Island.....	.....	.....	70.2	4.18					

Letters of the alphabet denote the number of days missing from the record, thus: the letter c indicates three days missing, etc., etc.

*Extremes of temperature from observed readings.

†Weather Bureau instruments.

‡Rainfall incomplete, 16.10 inches measured; gauge washed away.

§Incomplete.

Corrections: July, 1891, Fond du Lac, Wis., make maximum temperature 89 and mean 65.4.

Data from Canadian stations for the month of August, 1891.

Station.	Pressure.			Temperature.		Precipitation.		Prevailing direction of wind.
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Total.	Departure from normal.	
	Inches.	Inches.	Inches.	°	°	Inches.	Inches.	
Saint John's, N. F.....	29.88	30.02	.....	59.4	-1.6	4.91	.....	SW.
Sydney, N. S.....	29.93	29.99	+ .02	64.4	+ 2.4	1.28	- 2.62	SW.
Anticosti, Gulf of St. L.....	29.84	29.87	.....	57.6	-1.4	4.41	.....	SE.
Halifax, N. S.....	29.89	30.02	+ .03	64.6	+ 1.6	3.37	- 0.19	SW.
Grand Manan, N. B.....	29.94	29.99	.....	62.4	.....	2.05	- 1.04	SW.
Yarmouth, N. S.....	29.93	30.01	+ .01	61.6	+ 2.1	3.50	+ 0.28	S.
Saint Andrews, N. B.....	29.92	29.97	.....	61.4	.....	3.82	+ 0.97	SE.
Charlottetown, P. E. I.....	29.93	29.97	.....	65.1	.....	1.68	- 1.72	SW.
Chatham, N. B.....	29.93	29.95	+ .01	61.2	+ 0.2	5.76	+ 1.62	SW.
Father Point, Que.....	29.90	29.93	+ .01	55.0	-1.0	1.60	- 0.96	W.
Quebec, Que.....	29.62	29.94	- .01	62.6	-0.4	3.55	+ 0.13	W.
Montreal, Que.....	29.75	29.95	- .01	65.1	-1.4	3.70	+ 1.53	SW.
Rockliffe, Ont.....	29.48	29.93	- .05	59.9	-0.1	3.33	+ 0.40	NW.
Kingston, Ont.....	29.65	29.90	- .02	65.8	-0.7	3.37	+ 1.38	SW.
Toronto, Ont.....	29.60	29.98	- .02	64.8	-0.7	4.64	+ 2.26	N.
White River, Ont.....	28.65	29.98	.....	56.8	.....	2.10	.....	W.
Port Stanley, Ont.....	29.36	29.98	.....	65.6	.....	3.74	+ 1.35	W.
Saugeen, Ont.....	29.28	29.98	- .02	63.0	+ 0.5	3.91	+ 2.13	S.
Parry Sound, Ont.....	29.28	29.96	- .04	63.2	+ 1.2	4.01	+ 1.33	W.
Port Arthur, Ont.....	29.24	29.92	.....	59.4	+ 0.4	3.16	+ 0.79	W.
Winnipeg, Man.....	29.11	29.92	.....	60.8	-0.1	1.36	- 1.07	S.
Minnedosa, Man.....	28.14	29.92	+ .01	58.4	-0.1	3.96	+ 0.44	W.
Qu'Appelle, Assiniboia.....	27.72	29.92	+ .02	59.2	+ 1.3	1.88	+ 0.43	S.
Medicine Hat, Assiniboia.....	27.69	29.92	+ .02	62.2	-0.3	3.20	+ 0.09	W.
Swift Current, Assiniboia.....	27.42	29.93	+ .01	62.2	-0.3	1.58	.....	NW.
Calgary, Alberta.....	26.47	29.93	+ .03	58.0	.....	3.24	.....	S.
Prince Albert, Saskatchewan.....	28.36	29.93	.....	58.6	+ 0.5	1.47	+ 1.35	SE.
Esquimaux, B. C.....	.....	29.93	- .02	62.4	-0.6	5.34	+ 3.29	S.
Stony Mountain, Man.....	.....	29.93	+ .03	63.4	+ 0.2	2.10	- 0.01	SW.
Port Moody, B. C.....	.....	29.93	- .01	63.8	+ 0.8	2.78	+ 0.81	SW.
St. Albans, Man.....	28.74	.....	.....	57.8	.....	2.03	.....	NW.
Edmonton, Alberta.....	27.62	29.91	.....	61.2	.....	1.64	.....	NW.
Battleford, Saskatchewan.....	28.18	29.97	.....	61.0	.....	3.72	.....	SW.
Grindstone, Gulf St. L.....	29.91	.....	.....	79.3	.....	12.53	.....	SW.
Hamilton, Bermuda.....	29.94	.....	.....	.....	.....	.....	.....	SW.

Table of miscellaneous meteorological data for August, 1891—Weather Bureau observations.

Districts and stations.	Elevation above sea level, feet.	Length of record, years.	Pressure, in inches.		Temperature of the air, in degrees Fahrenheit.					Humidity and precipitation.				Wind.		Cloudless days.	Partly cloudy days.	Cloudy days.	Mean temperature data since opening of station.												
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Maximum.	Date.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.				Days with .01 or more.	Total movement, miles.	Prevailing direction.	Maximum velocity.	Date.	Average cloudiness, tenths.	Highest for month.	Year.	Lowest for month.	Year.			
New England.																															
Eastport	33	19	29.92	29.96	+ .01	62.3	+ 1.5	79	12	68	45	20	54	35	53	81	3.07	- 0.9	4,948	S.	30	21	9	13	6.2	62.2	1883	59.1	1879		
Green Mountain	28	38	29.98	30.00	0.00	61.2	+ 0.2	79	12	66	48	1	56	24	53	79	2.17	0.7	17,112	S.W.	24	21	9	10	6.4	70.5	1876	64.1	1885		
Portland	99	30	29.87	29.97	- .01	66.0	+ 1.0	88	12	73	50	1	59	24	59	89	1.15	- 2.5	5,007	S.	24	21	9	10	5.9	70.5	1876	64.1	1885		
Manchester	247	5	29.74	30.01	0.00	69.1	0.0	92	11	79	48	1	59	33	59	76	2.01	0.0	3,101	N.W.	18	7	9	11	5.6	67.1	1891	65.3	1887		
Mt. Washington	23	91	29.91	30.01	+ .02	46.6	0.0	66	11	51	32	29	42	30	42	86	6.73	- 1.3	19,710	N.W.	80	21	3	10	7.8	50.4	1872	43.6	1885		
Mt. Killington	26	09	29.99	30.00	0.00	54.3	0.0	74	11	60	35	29	49	16	50	88	4.34	0.0	14,222	S.W.	52	28	4	10	6.0	70.0	1891	61.0	1887		
Northfield	872	5	29.08	29.99	0.00	64.5	0.0	89	11	75	42	1	54	39	58	83	4.78	0.0	4,725	S.	30	21	15	15	6.8	64.5	1891	61.0	1887		
Boston	125	21	29.87	30.01	+ .02	70.0	+ 1.5	90	12	77	54	1	63	24	62	84	3.87	- 0.6	7,099	S.W.	36	21	9	14	5.2	72.4	1872	67.1	1887		
Nantucket	14	5	30.01	30.02	0.00	68.8	0.0	84	10	74	57	30	63	18	64	78	3.41	0.0	6,540	S.W.	30	21	6	14	5.1	70.9	1877	66.2	1874		
Woods Hole	22	14	29.99	30.00	0.00	69.3	0.0	83	10	74	58	31	64	17	65	86	3.57	- 0.6	8,309	S.	38	21	9	16	5.1	70.9	1877	66.2	1874		
Vineyard Haven	5	5	29.99	30.00	0.00	72.0	0.0	90	11	79	55	1	65	26	65	89	3.71	0.0	9,381	S.W.	46	21	10	14	4.8	70.2	1882	67.2	1889		
Block Island	27	11	29.99	30.03	+ .01	69.2	+ 1.1	85	10	74	56	1	65	28	65	89	3.51	+ 0.3	9,381	S.W.	46	21	10	14	4.8	70.2	1882	67.2	1889		
Narragansett Pier	28	10	29.99	30.03	+ .01	71.0	+ 2.6	94	10	79	56	1	63	28	65	89	2.00	- 1.7	7	S.W.	46	21	10	14	4.8	70.2	1882	67.2	1889		
New Haven	107	19	29.88	29.99	- .03	70.6	+ 2.1	90	11	79	59	1	62	27	64	81	3.14	- 2.4	4,934	N.E.	40	21	5	15	6.1	74.1	1877	67.3	1883		
New London	47	21	29.95	30.00	- .03	70.6	+ 2.1	93	10	77	59	1	64	25	64	83	4.09	- 0.5	4,735	N.	28	21	6	14	6.2	72.9	1877	67.5	1874		
Atl. Atlantic States.																															
Albany	85	18	29.90	29.99	0.00	71.2	- 1.0	93	11	80	54	*	63	35	63	79	5.88	- 2.1	3,812	S.	32	24	0	21	10	6.2	73.3	1881	66.8	1874	
New York, N. Y.	185	21	29.81	30.00	- .03	73.6	- 1.8	94	10	80	57	30	67	33	65	81	5.87	- 1.1	6,213	S.	27	11	4	11	16	7.1	75.5	1872	70.6	1874	
Harrisburg	377	4	29.60	30.00	0.00	72.2	0.0	92	10	80	54	29	64	24	63	77	5.20	- 1.7	3,489	E.	24	11	6	12	13	6.2	72.9	1888	69.8	1889	
Philadelphia	117	31	29.88	30.00	- .03	74.3	+ 0.8	97	10	82	54	30	67	25	64	77	4.22	- 0.6	6,015	S.W.	32	24	7	10	14	6.2	76.9	1871	71.3	1874	
Atlantic City	53	18	29.95	30.01	0.00	72.0	- 1.2	87	8	77	50	30	67	17	67	84	2.87	- 1.9	6,800	S.	29	23	9	13	9	5.0	74.8	1877	69.3	1889	
New Brunswick	179	21	29.81	30.00	- .03	73.0	0.0	98	11	83	54	1	63	33	63	79	6.88	0.0	16	S.E.	36	24	1	11	16	6.4	79.5	1872	72.6	1874	
Baltimore	112	31	29.90	30.02	- .02	74.3	+ 0.2	94	10	83	54	30	66	25	66	82	4.18	- 0.3	3,403	S.	34	24	8	10	13	6.0	79.0	1872	71.6	1874	
Washington, D. C.	112	31	29.90	30.02	- .02	74.3	+ 0.2	94	10	83	54	30	66	25	66	82	4.18	- 0.3	3,403	S.	34	24	8	10	13	6.0	79.0	1872	71.6	1874	
Cape Henry	685	21	29.32	30.03	0.00	74.1	+ 0.4	94	10	82	54	30	66	27	66	81	5.70	- 1.7	2,235	S.E.	22	23	3	15	13	6.6	80.2	1881	72.0	1874	
Lynchburg	43	21	29.97	30.01	- .01	72.4	+ 1.6	94	10	85	61	29	70	25	70	85	5.50	0.0	5,550	S.	32	24	15	15	15	6.4	79.5	1872	73.3	1874	
S. Atlantic States.																															
Charlotte	773	13	29.23	30.02	0.00	70.5	0.0	93	15	85	55	30	68	37	68	84	6.82	- 1.5	4,029	S.W.	36	23	9	11	11	6.0	80.9	1881	73.6	1879	
Hatteras	11	11	30.04	30.01	+ .04	78.7	+ 1.5	91	16	83	68	*	74	13	74	86	8.62	- 2.2	7,955	S.	44	23	6	9	13	5.4	78.7	1891	75.5	1886	
Kitty Hawk	9	17	30.00	30.01	0.00	78.7	+ 1.5	91	16	83	68	*	74	13	74	86	8.62	- 2.2	7,955	S.	44	23	6	9	13	5.4	78.7	1891	75.5	1886	
Raleigh	388	5	29.62	30.02	0.00	76.0	0.0	93	9	84	56	29	68	23	70	87	10.42	0.0	3,028	S.W.	20	23	11	6	11	6.7	78.1	1888	73.4	1889	
Southport	78	21	29.97	30.05	+ .02	79.0	+ 1.2	93	16	86	60	30	72	22	72	85	11.90	- 4.4	4,866	S.	26	23	1	14	9	5.8	80.9	1872	76.0	1889	
Wilmington	52	21	29.99	30.04	+ .02	81.5	+ 1.7	94	22	88	64	30	73	18	74	84	6.95	- 0.4	3,205	S.W.	26	23	1	17	17	3	4.8	82.9	1878	78.0	1889
Charleston	52	21	29.99	30.04	+ .02	81.5	+ 1.7	94	22	88	64	30	73	18	74	84	6.95	- 0.4	3,205	S.W.	26	23	1	17	17	3	4.8	82.9	1878	78.0	1889
Columbia	209	5	29.84	30.05	+ .03	79.1	- 0.9	94	22	88	65	30	72	23	73	84	11.54	- 4.1	4,319	S.W.	38	22	5	11	15	6.0	82.7	1878	78.5	1889	
Augusta	87	21	29.95	30.05	+ .04	80.5	+ 0.8	97	22	91	70	31	74	23	73	80	3.07	- 2.9	4,904	S.E.	41	23	3	21	8	6.0	82.7	1878	78.5	1889	
Savannah	43	20	29.95	30.05	+ .04	80.5	+ 0.8	97	22	91	70	31	74	23	73	80	3.07	- 2.9	4,904	S.E.	41	23	3	21	8	6.0	82.7	1878	78.5	1889	
Jacksonville	43	20	29.95	30.05	+ .04	80.5	+ 0.8	97	22	91	70	31	74	23	73	80	3.07	- 2.9	4,904	S.E.	41	23	3	21	8	6.0	82.7	1878	78.5	1889	
Florida Peninsula.																															
Jupiter	28	4	30.02	30.05	0.00	80.6	0.0	90	15	87	68	27	74	20	77	89	4.20	0.0	5,666	S.E.	36	24	8	19	4	4.7	81.0	1888	79.9	1889	
Key West	32	21	30.02	30.04	+ .03	82.2	- 1.9	99	4	88	70	15	76	17	75	77	10.13	- 5.3	4,767	S.E.	30	24	15	8	15	5.8	85.6	1878	81.2	1889	
Mico	36	5	30.01	30.05	0.00	81.2	0.0	94	17	90	70	70	72	22	76	87	9.48	0.0	3,256	S.E.	24	24	5	3	10	5.8	81.0	1881	79.4	1889	
Tampa	44	5	30.02	30.05	0.00	81.8	0.0	94	17	90	70	70	72	22	76	87	9.48	0.0	3,256	S.E.	24	24	5	3	10	5.8	81.0	1881	79.4	1889	
Titusville	44	5	30.02	30.05	0.00	81.8	0.0	94	17	90	70	70	72	22	76	87	9.48	0.0	3,256	S.E.	24	24	5	3	10	5.8	81.0	1881	79.4	1889	
Eastern Gulf States.																															
Atlanta	1,131	13	29.88	30.04	0.00	76.6	- 0.1	93	21	85	55	24	68	23	67	79	2.59	- 2.0	4,893	S.W.	36	24	17	10	10	6.5	78.5	1888	73.4	1879	
Pensacola	56	12	29.95	30.02	+ .01	80.6	- 0.1	94	12	88	62	25	74	24	72	79	0.72	- 8.1	9	S.W.	30	24	14	3	3	3.7	81.0	1887	78.8	1882	
Auburn	10	10	29.95	30.02	+ .01	78.0																									

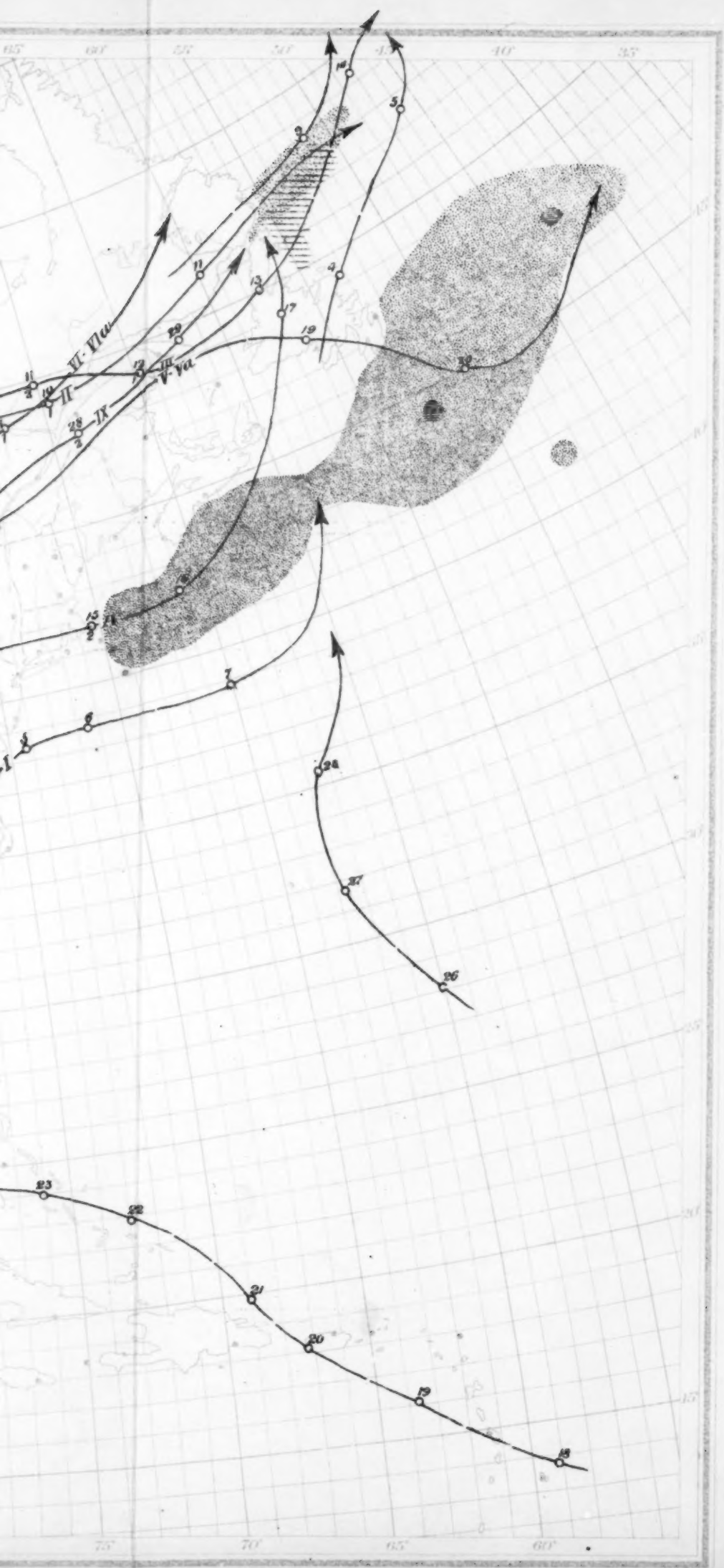
Table of miscellaneous meteorological data for August, 1891—Weather Bureau observations—Continued.

Districts and stations.	Elevation above sea level, feet.	Length of record, years.	Pressure, in inches.		Temperature of the air, in degrees Fahrenheit.					Humidity and precipitation.					Wind.				Mean temperature data since opening of station.											
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the day-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01 or more.	Total movement, miles.	Prevailing direction.	Miles per hour.	Direction.	Date.	Cloudless days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Highest for month.	Year.	Lowest for month.	Year.
Up. Lake Reg.—Con.																														
Duluth.....	656	21	29.26	29.96	-.00	62.3	1.0	85	10	69	44	23	56	36	53	73	3.11	0	4,265	NW.	25	NW.	21	15	10	6	4.370.3	1878	60.7	1890
Extreme Northwest.																														
Moorhead.....	935	11	28.95	29.94	-.00	64.9	2.6	96	7	78	34	23	52	39	53	71	2.54	0	6,445	S.	46	SW.	7	22	6	3	2.868.7	1882	60.2	1885
Saint Vincent.....	804	11	29.08	29.93	-.00	62.2	0.6	88	5	75	32	23	52	39	53	71	3.12	0	6,043	W.	42	NE.	17	15	14	3	3.265.9	1881	58.3	1885
Bismarck.....	1,698	17	28.18	29.94	+.02	66.0	1.9	94	18	79	35	27	53	39	51	65	1.43	0	6,230	NW.	38	NW.	5	13	17	1	3.871.3	1878	62.3	1885
Fort Buford.....	1,900	13	27.97	29.96	+.06	64.4	3.1	97	18	79	37	26	50	41	50	63	0.78	0	4,745	E.	42	NW.	7	22	8	1	2.870.8	1882	61.9	1885
Upper Miss. Valley.																														
Minneapolis.....	758	21	29.17	29.96	-.00	68.3	1.0	95	8	79	42	23	58	30	53	71	3.18	0	4,870	W.	30	NW.	29	10	10	5	5.0	1881	65.0	1885
Red Wing.....	831	21	29.09	29.98	+.03	67.5	1.0	95	8	78	40	28	57	36	56	70	2.88	0	4,699	SE.	30	NW.	20	6	21	4	4.972.9	1881	65.0	1885
Saint Paul.....	736	19	29.23	30.01	+.01	68.0	0.5	97	8	79	39	28	57	35	57	74	1.48	0	3,372	S.	20	N.	1	7	17	7	5.374.5	1881	65.8	1885
Davenport.....	613	20	29.37	30.01	+.01	70.0	1.3	94	9	79	46	28	57	36	59	74	5.54	1.8	4,920	SW.	42	SW.	9	10	15	6	4.878.1	1873	68.0	1885
Des Moines.....	869	14	29.09	30.00	+.02	69.8	2.2	93	8	80	40	24	60	29	59	74	4.22	0.8	4,737	SW.	30	E.	13	7	15	9	5.478.1	1876	68.7	1884
Dubuque.....	651	19	29.31	30.01	+.01	70.2	0.1	96	8	80	45	24	60	29	59	72	3.31	0.2	4,823	NW.	20	W.	27	8	14	9	5.474.5	1881	66.4	1885
Keokuk.....	613	21	29.36	30.00	+.01	71.1	2.2	95	8	81	47	28	61	27	61	75	6.10	3.1	3,275	S.	35	NW.	9	14	11	6	4.479.2	1881	70.0	1885
Cairo.....	359	21	29.65	30.03	+.04	74.4	2.1	92	18	83	52	24	65	26	65	77	4.77	1.9	4,377	SW.	42	NW.	20	16	5	10	4.182.8	1881	73.6	1875
Springfield, Ill.....	644	13	29.33	30.01	+.01	71.5	1.2	94	9	81	48	26	62	31	60	73	4.65	2.3	4,825	N.	32	NW.	10	11	12	8	4.878.5	1881	70.5	1883
Saint Louis.....	571	21	29.41	30.01	+.02	70.8	0.6	96	10	83	53	24	66	25	62	71	2.75	0.2	6,518	SW.	38	W.	11	11	11	9	5.282.5	1881	72.6	1883
Missouri Valley.																														
Columbia.....	963	4	29.01	30.00	...	73.1	...	96	7	87	42	28	60	36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kansas City.....	1,356	5	29.01	30.02	...	73.3	...	94	18	83	46	24	64	26	64	77	6.25	...	5,637	SE.	48	N.	21	11	16	4	4.274.3	1889	73.5	1891
Springfield, Mo.....	842	5	28.61	30.02	...	73.0	...	97	18	85	40	24	61	37	63	77	4.23	...	4,208	S.	36	N.	20	15	14	3	3.974.2	1888	72.5	1882
Topeka.....	1,113	21	28.83	30.02	+.03	73.2	0.3	97	8	81	44	23	64	34	60	71	2.02	1.4	4,952	SE.	26	SW.	18	13	15	4	4.80.2	1881	69.2	1885
Omaha.....	2,613	6	27.32	29.97	...	71.4	...	94	8	82	39	23	61	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Crete.....	1,588	21	28.76	29.97	...	70.2	...	96	8	81	40	23	60	29	59	75	3.54	...	6,353	SE.	40	SE.	6	9	14	5	5.9	1889	67.3	1887
Valentine.....	1,470	21	28.41	29.91	-.03	71.5	0.3	104	7	84	42	23	59	39	56	64	1.50	0.4	5,587	SE.	38	W.	7	5	15	11	5.9	1889	67.3	1887
Sioux City.....	1,310	11	28.58	29.94	-.01	67.8	1.2	97	7	82	34	23	54	43	54	67	1.43	1.7	8,814	SE.	44	NW.	17	12	18	1	4.271.7	1881	64.0	1885
Pierre.....	1,280	19	27.12	29.94	...	67.8	1.2	97	7	82	34	23	54	43	54	67	1.43	1.7	8,814	SE.	44	NW.	17	12	18	1	4.271.7	1881	64.0	1885
Northern Slope.																														
Fort Assiniboine.....	2,690	12	27.18	29.95	+.04	64.4	1.9	91	30	77	39	23	51	42	49	62	1.67	0.0	6,180	NE.	40	SW.	7	14	4	13	4.570.8	1882	62.4	1880
Custer Station.....	2,733	11	27.12	29.89	...	69.5	0.6	97	18	85	42	22	54	45	45	34	0.98	...	5,607	NE.	48	SE.	3	15	13	3	3.7	1882	62.4	1880
Helena.....	3,280	6	26.65	29.92	...	69.2	...	100	6	82	42	23	57	39	49	54	1.97	...	5,735	W.	36	W.	4	8	20	3	5.273.4	1881	66.2	1888
Rapid City.....	6,105	21	24.15	30.01	+.10	65.4	0.4	89	13	79	38	23	51	39	41	57	2.16	0.6	5,910	NW.	40	E.	15	7	22	2	5.168.1	1889	61.1	1884
Cheyenne.....	5,000	4	25.10	29.97	...	67.3	...	89	18	79	42	27	56	33	51	54	0.78	...	6,524	N.	36	W.	6	14	8	9	4.469.6	1889	64.4	1888
Fort McKinney.....	2,841	17	27.12	30.01	+.05	70.0	1.0	97	8	83	41	23	57	37	58	74	2.45	0.0	5,419	SE.	43	NW.	17	11	17	3	4.577.4	1881	67.2	1885
North Platte.....	2,841	17	27.12	30.01	+.05	70.0	1.0	97	8	83	41	23	57	37	58	74	2.45	0.0	5,419	SE.	43	NW.	17	11	17	3	4.577.4	1881	67.2	1885
Lander.....	2,841	17	27.12	30.01	+.05	70.0	1.0	97	8	83	41	23	57	37	58	74	2.45	0.0	5,419	SE.	43	NW.	17	11	17	3	4.577.4	1881	67.2	1885
Middle Slope.																														
Denver.....	5,287	20	24.86	29.98	+.09	69.2	0.3	94	13	83	46	23	56	33	45	52	2.84	1.3	4,639	SW.	30	N.	21	9	18	4	4.772.8	1889	68.0	1888
Pueblo.....	4,734	4	25.35	29.96	...	72.8	...	98	15	89	46	23	56	33	43	44	0.21	...	4,892	NW.	48	N.	21	12	16	3	4.475.8	1889	71.1	1888
Concordia.....	1,410	7	27.54	29.98	...	74.4	0.7	100	8	87	41	23	62	40	60	68	0.69	3.4	4,710	S.	28	N.	6	21	8	3	2.775.9	1886	71.1	1885
Dodge City.....	2,523	17	27.42	29.96	+.01	74.0	1.3	96	16	87	46	23	61	32	58	65	1.36	1.7	8,275	S.	35	N.	18	19	10	3	3.278.0	1881	71.7	1883
Wichita.....	1,366	4	28.57	29.98	...	76.0	...	98	16	88	47	24	64	33	61	67	0.40	...	5,656	S.	28	NW.	21	20	11	0	2.577.2	1890	75.5	1889
Oklahoma City.....	1,239	...	28.75	30.02	...	76.8	...	99	20	88	49	23	66	31	64	69	0.79	...	5,862	S.	28	N.	25	19	11	1	3.2	1889	75.5	1889
Southern Slope.																														
Fort Sill.....	1,200	14	28.78	30.01	+.03	78.2	2.1	101	20	90	53	23	66	30	66	74	1.48	2.4	6,463	SE.	40	W.	21	17	9	5	3.787.1	1881	75.5	1882
Abilene.....	1,748	6	28.24	30.02	...	80.1	...	102	20	91	55	23	69	32	63	66	2.03	...	7,434	NE.	48	NE.	22	13	13	5	4.282.1	1886	80.1	1891
Fort Stanton.....</																														



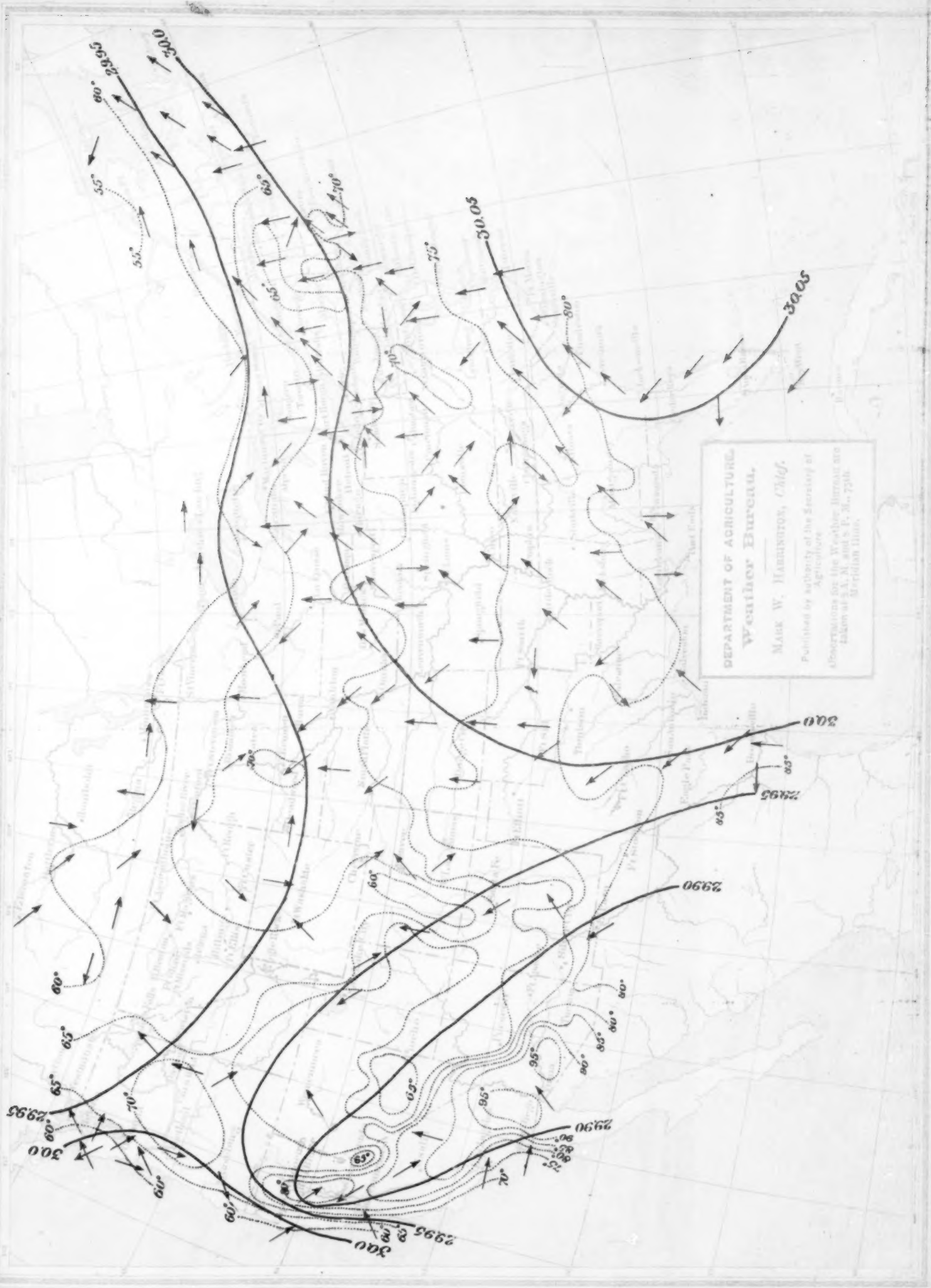
Chart I. Tracks of Areas of Low Pressure. August, 1891.





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Chart II. Isobars, Isotherms, and Winds. August, 1891.



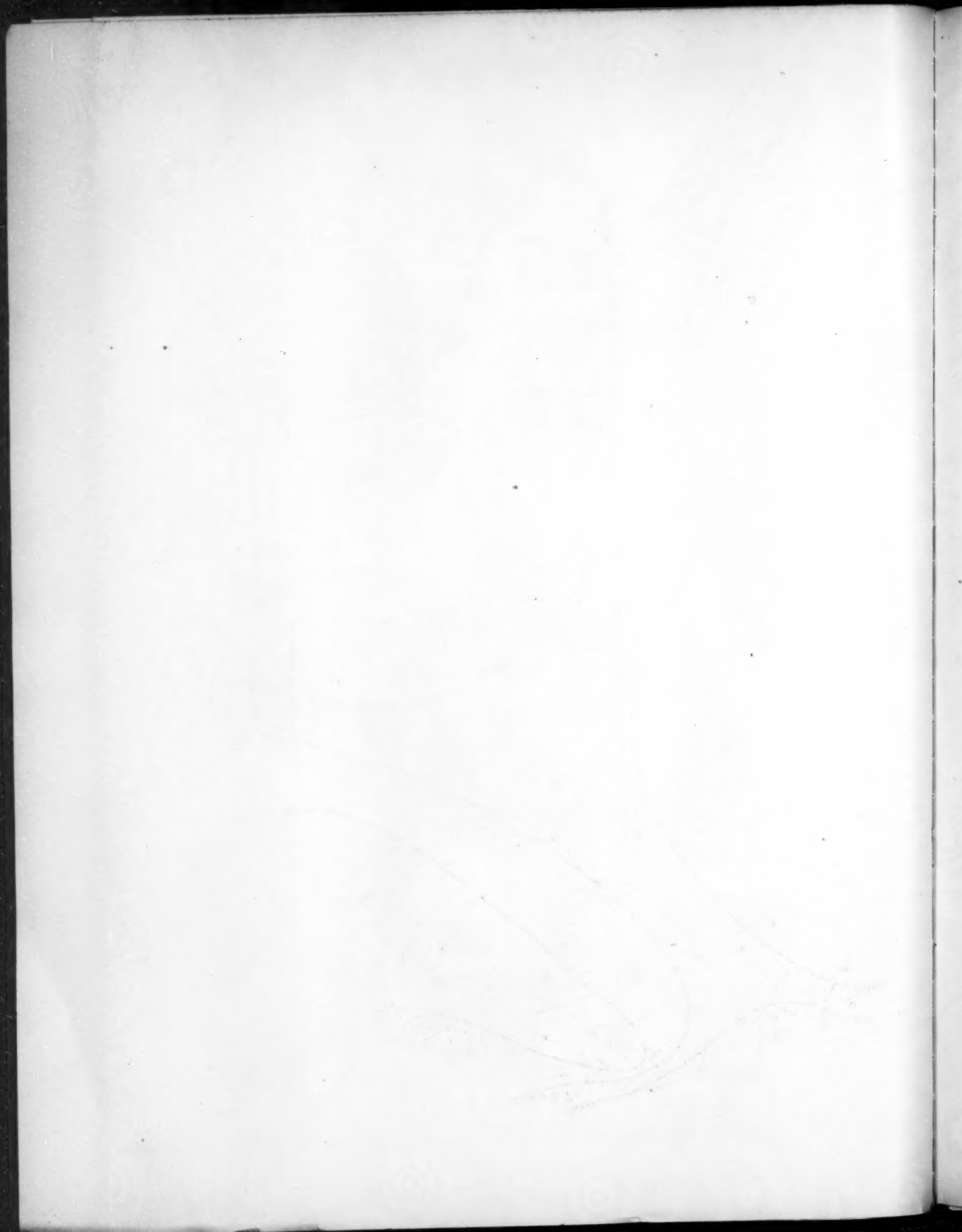
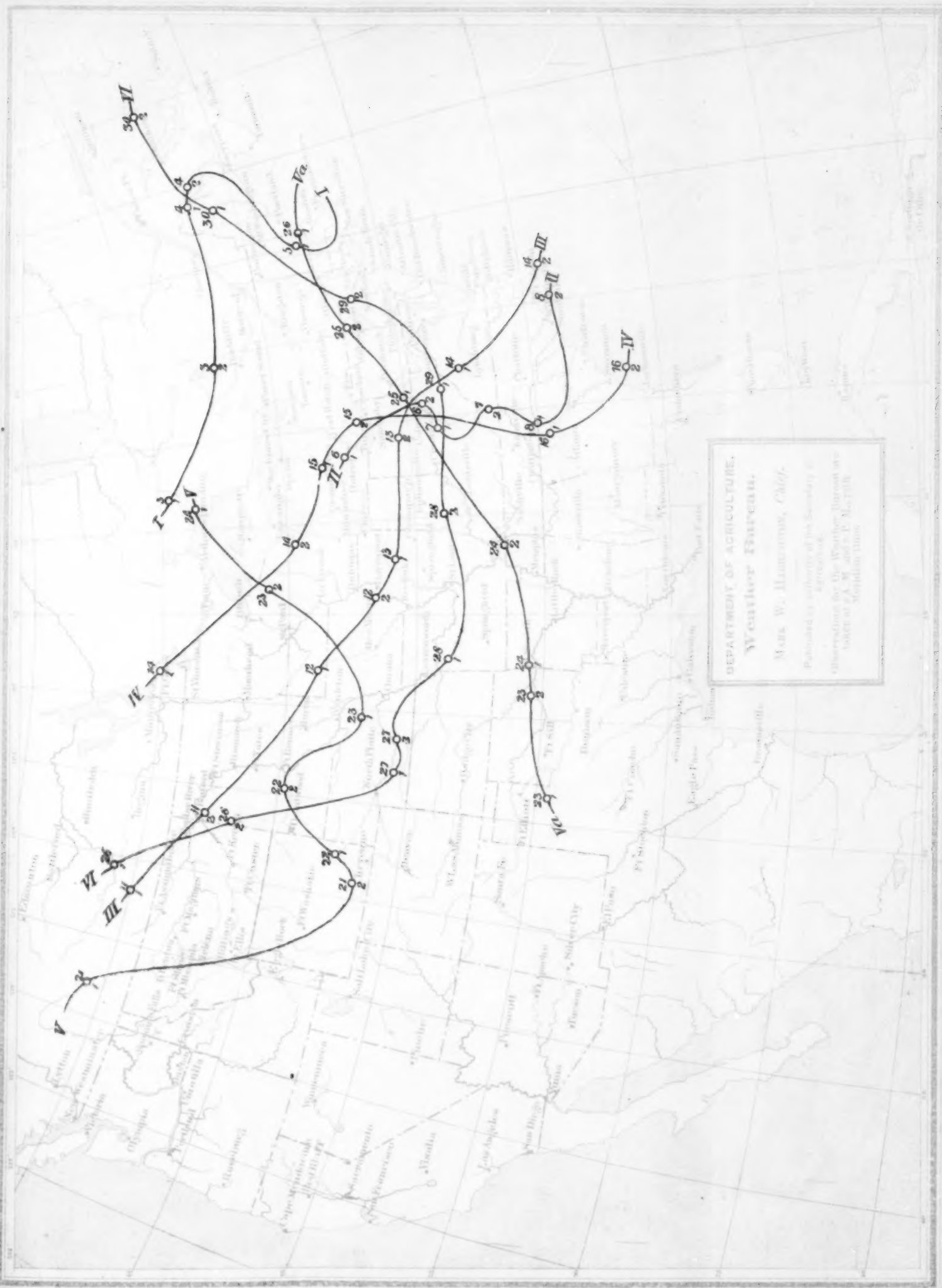


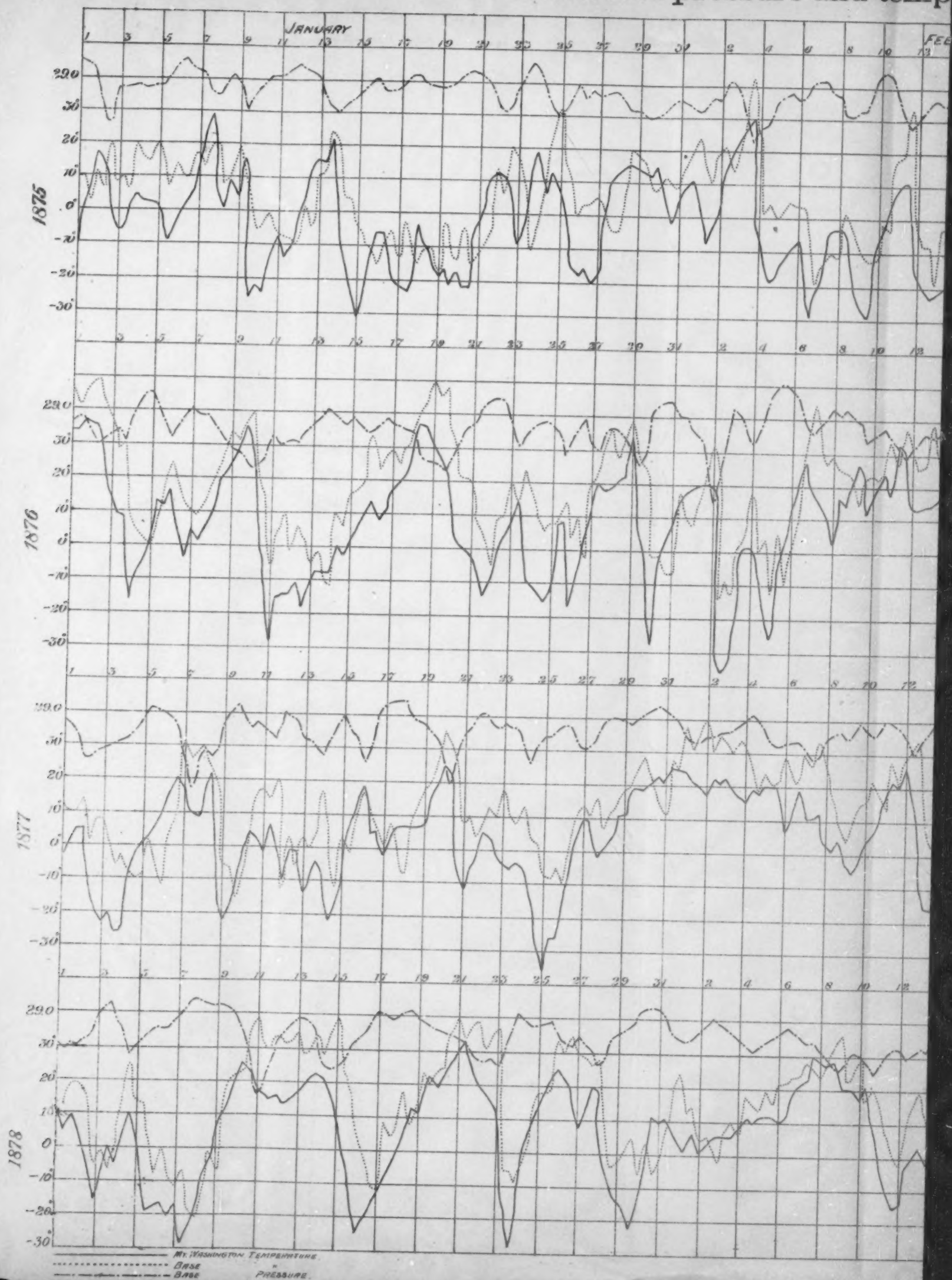
Chart III. Precipitation, August, 1891.



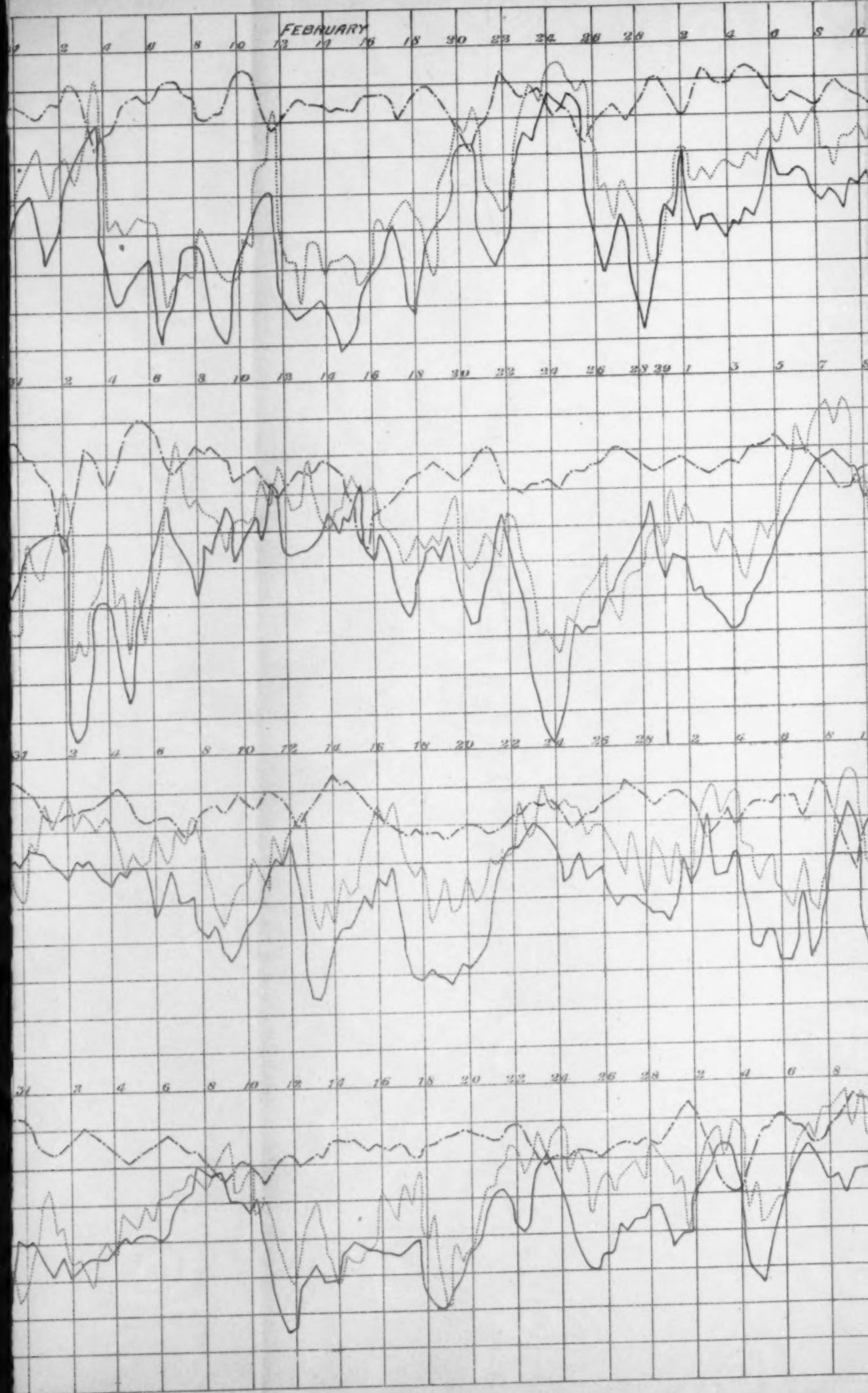
Chart IV. Tracks of Areas of High Pressure. August, 1891.



Fluctuations of pressure and temp



pressure and temperature near Mount Washington,



ington, N. H.

